Aerial view of Elm Brook Wastewater Treatment Facility, City of Abbotsford

53rd Annual W.W.O.A. Conference
October 8-10, 2019
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.

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2019-2020
W.W.O.A. OFFICIAL DIRECTORY
Presidents message: Educate while we protect our resources

Greetings to all my professional wastewater colleagues!

Many of you enjoyed a great annual conference with us at The Grand Geneva Resort in October. We had very good attendance in the general conference as well as the pre-conference activities. Thank you to all who helped and participated.

As I write this message, I’m enjoying a very nice fall day in Wisconsin. For many of us, fall is our favorite time of the year. Cool breezes, falling leaves, the smell of wood burning and beautiful sunsets are all part of what makes this time of year so special.

For me, fall is hunting season! Since I was a young boy, my father would take me hunting. As I sit in my tree stand, I mostly enjoy the beauty and serenity that it brings.

I am also reminded that this time, along with all of the other freedoms we enjoy, would not be possible if not for the great sacrifices of the men and women, past and present, in the Armed Forces.

My father was a WWII veteran and he taught me to respect and honor these sacrifices, and all of our military. We live in a great country where we can enjoy our freedoms and the beautiful lakes, streams and waters that the thousands of wastewater professionals like yourself help to keep clean.

I have had the pleasure of serving and being a part of this great organization for 26 years. As we look forward to 2019, let us continue to be mindful of our responsibilities to educate the public and each other while we protect our resources.

May we continue to strive for good communication, great ideas and clean water.

Thank you for your dedication.

May you and your family enjoyed a safe and blessed holiday season!

Sincerely,

Jeff (Juice) Simpson

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Clarifier deadlines 2019

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City of Abbotsford-Elm Brook Wastewater Treatment Facility

By Todd Medenwaldt, Water/Wastewater Manager

For years, the City of Abbotsford struggled to provide effective wastewater treatment. The former plant dated back to the 1960's and utilized Rotating Biological Contactors (RBCs). The plant at one time took waste from a meat packing industry, but as issues arose over the strength of the industry waste and costs increased, the industry constructed their own wastewater system.

The challenges for Abbotsford did not go away; instead the age of the plant components presented further complications as the City funneled more money to just keep the old plant functional.

In 2013 the wastewater picture for the City brightened considerably. The City was able to secure USDA Rural Development funding (grant and loan funds) of $8.6 million along with other City funding for the $9.4 million dollar project. A site was secured for the new plant that was a quarter mile away from the old plant. Having the plant at a new site allowed the existing plant to stay operational during the construction period.

The new Elm Brook Wastewater Treatment Facility with a design capacity of 1.573 MGD and peak hourly flow of 2.304 was designed around the Sequencing Batch Reactor (SBR) concept. Other major components include a main continued on page 6
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lift station with fine screen, grit removal, aerobic digestion and reed bed biosolids storage. Besides the Main Lift Stations, the City also operates the Elderberry Lift Station and the Larch Court Lift Station with a total of 5,400 feet of forcemain. The collection system has 4.7 miles of piping that ranges in diameter from 8 inches to 24 inches.

The wastewater plant was designed for a population of 2,567 and an average daily flow of 0.323 MGD. The plant design for influent BOD is 663 lb/day and average ammonia is 67 lb/day. The permit limits for the facility is BOD 20 mg/l, TSS 20 mg/l, a variable monthly average ammonia limit that ranges from 3.7 mg/l to 6.0 mg/l. Actual daily flow is 0.200 MGD with effluent BOD averaging 3 to 4 mg/l and effluent TSS averaging 3 to 4 mg/l.

The continual flow SBR system utilizes two treatment cells. Both cells feature a pre-react zone. Each cell has a five-step process consisting of fill, react, settle, decant and idle. During the fill stage mixing is provided, but no air to create a period of anoxic treatment for biological phosphorus removal. Ferric chloride is added towards the end of the SBR process to minimize phosphorous.

The initial plant construction was designed for phosphorus minimization, however, it was not designed to meet the future limit of 0.075 mg/l. Phase 2 of the Elm Brook Wastewater Treatment Facility includes treatment for copper and phosphorus removal down to the future lower limits. The plant was designed for more efficient operation. The City incorporated a fine screen at the main lift station. The fine screen is a great improvement over the older bar screen. The screenings are deposited into a lined garbage container that is picked up weekly for landfill disposal. This method minimizes staff contact with screenings. A magnetic flow meter at the influent line to the plant provides accurate flow data. Composite samplers are provided at the influent and effluent locations of the plant.

Previously the flow data at the old plant was erratic due to material plugging the older open channel Parshall flume meter. Similar to the fine screen, the vortex grit removal system efficiently places grit product into a lined dumpster for landfill disposal.

The control system for the SBR provides the operator with real time information of the batch process. Sensors for dissolved oxygen and mixed liquor values allow the equipment to automatically adjust to variations in treatment.

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WHAT’S INSIDE MATTERS

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The SBR units have a storm mode sequence that allows the treatment system to accommodate high flows from rain storms and snow melt due to inflow and infiltration in the collection system.

The reed bed biosolids storage system was an important improvement over the old plant. The old process required yearly land spreading which was proving to be more difficult due to objections from neighbors adjacent to the spreading fields. With the new reed beds, sludge from the aerobic digester is pumped to the reed beds where the biosolids provide nutrients for the reeds and the solids are broken down in the process. The reed bed filters the liquid component of the biosolids and this liquid is sent to the front end of the plant.

The plant has had some operational challenges due to extremely cold weather. During the first winter of operation, some smaller sample lines froze and the City remedied this by adding heat tape and insulation. Ice accumulation in the SBRs sometimes needs to be manually broken up during low temperature events.

As expected in a northern Wisconsin WWTP many of the treatment processes are enclosed in buildings or otherwise protected from the elements. The building type predominantly used is masonry with either a concrete roof as in the case of the lift station or a metal roof for the office/lab building. The office/lab building also includes...
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The project came in under budget and the City was able to add a canvas building structure over the SBR and digester. The building prevents windblown debris such as leaves from settling in the open SBRs. During the winter or rain/wind events, the building provides a much-needed level of protection from the elements and retains some of the heat from the wastewater process.

Additional funds allocated from the project were also used to replace older clay pipe in two areas of the City. The clay pipe had numerous cracks and offset joints which were a

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significant source of clearwater infiltration. During this part of the project, the City also updated water and stormwater system infrastructure.

The City staff consists of Todd Medenwaldt, Water/Wastewater Manager; John Smith, operator; Josh Soyk, operator.

CBS Squared provided construction engineering services for the project starting in Dec. of 2015. Operational and permitting engineering services are also provided by CBS Squared.

Abbottsford staff, John Smith and Josh Soyk operate the plant.
A topic that we feel deserves more recognition is septicity vs. low dissolved oxygen. This article is written with the understanding that septicity = containing elevated low molecular weight organic acids (volatile acids) and/or hydrogen sulfide. Also note that within this article the terms volatile acids, septicity and organic acids are used interchangeably. Can you have septicity with high DO? Yes….The reason being is that when many organic acids are formed they are not oxidized until they undergo biological treatment. In other words, once they’re there, they’re there. Note that additional aeration and many oxidizers such as chlorine and hydrogen peroxide typically have little impact on organic acid removal once these are formed. (Reference Dr. Michael Richard, 2018).

Organic acids can be formed in areas where there is a carbon source (BOD), no free or combined oxygen, and bacteria present. At these mentioned conditions treatment shifts from true aerobic treatment to fermentation, in which the BOD (food) is broken down into “smaller pieces” of food rather than being fully treated. Organic acids are essentially these “smaller pieces” of food. Common places where organic acids form include collection systems, lift stations, equalization basins, primary clarifiers, aeration basins without adequate dissolved oxygen, final clarifiers, and sludge handling return streams. ORP (Oxidation Reduction Potential) is a useful measurement for these areas as negative ORP values can typically be thought of as “negative dissolved oxygen” and positive ORP environments are typically aerobic. If the ORP mv reading is a negative number in a particular area it is likely that organic acids are being formed there. Organic acids (volatile organic acids) can be tested using Standard Method #5560C testing as well.

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as the Hach TNT872 test method (recommended). Volatile acid concentrations of >100 mg/L are a recognized cause of filamentous bulking (Jenkins, 2004).

Septicity vs. low dissolved oxygen are two very separate issues. In wastewater we “are what we eat” meaning our treatment systems grow the type of bacteria that win the competition for food at existing conditions. In low dissolved oxygen areas there is DO present, just a very limited amount, which allows certain bacteria to outcompete other bacteria at these conditions. As long as oxygen can be an electron receptor, these reactions will result in full aerobic treatment (conversion to water, carbon dioxide, and new biomass). Note that even low DO filamentous bacteria are aerobic organisms. Low DO problems can often be fixed with additional aeration or making process control changes that decrease the oxygen uptake rate (OUR) of the bacteria such as raising the MLSS concentration when the F/M ratio on the front end of the aeration basin is too high creating higher bacterial growth rates.

It is rarely economically practical to chemically treat organic acids once they are formed. In most instances it is more efficient to prevent their formation in the first place. In order to accomplish this, the ORP needs to be increased to neutral or positive values in areas where the organic acids are being formed.

This is often accomplished through additional mixing, aeration, chemical addition (calcium nitrate, hydrogen peroxide, potassium permanganate), or reduction of hydraulic retention time (such as taking a primary clarifier out of service if the retention time is too long and is resulting in the formation of increased organic acids.)

Certain filaments and other bacteria have potential to outcompete desired bacteria at elevated organic acid concentrations. Note that for discouraging these filaments, increasing the DO in the aeration basin will not work unless the aeration basin is the source of the fermentation to organic acids/ food for these filaments.

In some instances in which organic acids are causing problems it is more efficient to deal with these retroactively, such as RAS chlorination to selectively kill filaments after they grow. Note that strategies such as RAS chlorination should be done with caution with careful attention to detail under the management of experienced professionals.

As always in wastewater there is no one size fits all answer and issues and any appropriate actions taken as a result of these issues depend on individual circumstances. Septicity is normal and to be expected in wastewater systems.

If septicity is present, but not causing problems, in many cases the famous saying “if it’s not broke, don’t fix it” will apply. Just because conditions are present does not always
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mean these conditions are problematic. Our ultimate goal is to grow bacteria that consistently meet permit requirements with limited risk to process upset through the most efficient measures.

Through microscopic evaluation and ranking of filamentous bacteria and other indicator organisms and their respective abundance, causes can be applied to the overall “big picture” of what is occurring within a plant. Having a “diagnosis” for a problem is the necessary starting point in troubleshooting and can help differentiate issues such as septicity vs. low dissolved oxygen.

Best wishes for everyone this month. Also if anyone is interested in contributing an article to this section in the future please feel free to contact me via email as we are going to begin to open this up to guest authors as well.

Thank you.
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North Central Labs hosts North Central meeting-Birnamwood

The North Central Region had our summer meeting at North Central Laboratories in Birnamwood on June 27th. For the 6th time in 15 years owner Mike Raynovic opened up his meeting hall for our use and helped us create a laboratory themed meeting. We had 65 people in attendance. Mike started the meeting off by introducing himself and his staff, encouraging anyone with questions to speak up anytime during the presentations.

NCL service technician Mark Mahoney gave the first presentation for the day on Low Level Phosphorus Testing using the Genesys 30 spectrophotometer. He talked about the design of spectrophotometers in general and their differences from more basic colorimeters. He also covered some of the specific functions and capabilities of the Genesys 30 model.

Mark highlighted the importance of using high quality glassware and instrumentation when trying to achieve the LOD/LOQs necessary for reporting the low level phosphorus results associated with newer permit limits in Wisconsin, previewing the LOD study requirements Rick Mealy would cover in detail in his presentation after lunch.

He also emphasized the benefit of using a cuvette with a long light path length to achieve “ultra” low results. Mark reviewed the most popular ascorbic acid method for reporting permit required phosphorus results including sample preparation, proper digestion techniques, and color generation.

Mike Raynovic gave the second presentation, “Troubleshooting BOD Blank and GGA Problems”. With a long career in the laboratory industry and a book credit to his name on BOD testing, Mike has just about heard it all when operators and laboratory technicians call him up to ask questions about problems with the BOD test.

Mike emphasized the need to focus on changing only one variable at a time when troubleshooting BOD problems, and working in a systematic way to address each aspect of the test. First and foremost is the need to obtain high quality dilution water. Dilution water problems typically show up in blanks, and all problems associated with troubleshooting BOD problems start with obtaining good blank results. Mike highlighted some of the most common problems with both store bought and lab made water.

After dilution water, seed is the next most common source of problems in the BOD test. Seed can be locally sourced in the form of settled raw wastewater, or it can be purchased commercially. As with everything OBD related, Mike talked about the need for consistency in seed strength and selecting the proper volumes to add. He reviewed G/GA criteria and the things to look for when dealing with too low or too high G/GA results. He also talked about BOD meters and probes and their proper maintenance.

After a short break, Mike introduced Rick Mealy from the DNR. Rick is the Program Chemist in the Laboratory Certification program, and a director on the State WWOA Board, chairing the Operator’s Competition and Career Development committees. His presentation, “Changes to NR149”, focused on the most recent revisions to the laboratory certification program. The changes are designed to bring the state into compliance with federal guidelines. Rick was quick to point out that although not everyone agrees that all of the changes are beneficial, the state is required to follow federal guidelines.

He reviewed the goals of the updates, minor items included fixing a number of “broken” requirements, re-organizing the code structure into a more logical sequence, bulking up calibration requirements, and simplifying quality control samples. A number of major items included establishing fee equity, including removing caps on RUU’s, and better addressing PT failures.

A brand new section in the code addresses Laboratory Ethics, an item long overdue in the program. The code now specifically addresses items like fabrication of data, improper setting of clocks or logging of time, unwarranted sample manipulation, and failing to report improper or unethical behavior.

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After Rick’s presentation WWOA NCR Steering Committee Chair Andy Ott presided over the regular business meeting. The minutes are as follows:

Andy Ott opened the Business meeting at 11:45. Andy thanked everyone for coming to the meeting, especially Mike Raynovic and the NCL staff for hosting the meeting and providing the tour.

Andy introduced Jeff Simpson, President Elect of the State WWOA Board, and this year’s Regional Coordinator. Jeff spoke on a number of state WWOA topics, highlighted upcoming meetings, and encouraged increased membership activity.

Ken Bloom, WWOA NCR Treasurer, presented the most current financial statement. As of the date of the meeting, the region has $4,048.12 in our checking account and $679.01 in the escrow account held in trust by the State WWOA.

Andy reminded the group of the awards that are presented each year at the State WWOA Conference. Andy highlighted the scholarship and tuition reimbursement opportunities offered by the State WWOA. Andy encouraged any non-members present to consider membership in the WWOA and highlighted the membership benefits included.

Andy encouraged those present to consider hosting a future WWOA NCR meeting. Steering Committee members are available to provide as much or as little help as needed. Andy encouraged those present to like and follow the region’s Facebook page.

Andy opened the floor for any new business. There being none, he adjourned the meeting at 12:00.

After the business meeting Ken and Andy held a door prize drawing for some promotional clothing items provided by the region. Chris Helgestad collected names for those non-members in attendance that wished to be included in the drawing for our region’s new membership sponsorship. Congratulations to Cody Kerr from Kewaskum and Jeffery Miller from Algoma for winning new membership sponsorships.

After a top-notch lunch of chicken and prime rib heavily discounted by NCL, Rick Mealy gave his second presentation of the day, “Changes to LOD Measurements”. The LOD procedure, called the MDL by the federal EPA, was last updated in 1984. The most recent changes are intended to address laboratory blank contamination and better account for intra-laboratory variability and were originally introduced by the NELAC Institute.

Rick talked about the difference between the new procedure and the old. It’s important to realize that the new procedure, like the old, is based on precision, i.e. standard deviation, and that analyzed spike blanks are still used to calculate the LOD. Unlike the old procedure, the new procedure requires spikes to be analyzed on three separate days, and must include all instruments in the laboratory used in the analysis.

Rick then walked everyone through the procedure to establish an LOD for a common wastewater parameter like phosphorus. The two-step process includes first estimating the LOD by evaluating a set of spike blanks. This step is not needed in labs that have established LODs as a starting point. The second step is to process a set of spiked blanks AND a set of method blanks. A statistical comparison of the results is made and the final LOD becomes the greater of the two results. A copy of Rick’s presentation is available on the DNR’s website.

Mike Raynovic took the stage for his final solo presentation on diagnosing problems with pH/ISE meters and probes. Mike is famous for his take on operators keeping old non-functional probes in a drawer because they are reluctant to throw away such expensive items. Mike likes to point out that faulty probes never fix themselves. The worst thing you can do with a bad probe is keep it around. The good news is that most probes have a long service life when they are properly maintained.

Mike emphasized that most of the time meters simply work or they don’t. He reviewed meter function as converting a voltage sent by the probe into a pH value based on the slope of the calibration line created by inputting buffer values. Meter problems are typically physical problems related to power sources, batteries and AC, and display screens.
and are easy to diagnose using shorting caps supplied by the manufacturer, or the testing equipment used by NCL technicians that mimic probe signals.

When maintaining pH probes it is important to use the proper filling solution. Mixing and matching solutions with different probe manufacturers is not a good idea. Always use the manufacturers’ recommended filling solutions and follow their instructions for proper probe preparation. Also, take some care when cleaning a probe. Most probes have combination reference and internal junctions that need to be cleaned occasionally but can be damaged easily. Again, follow manufacturer’s instructions.

With the presentations concluded, Mike and his staff took the group on a tour of the main building including the offices and technical service labs, and the second building used for reagent manufacturing, product storage, and shipping.

Submitted by Chris Helgestad, WWOA NCR Secretary
2018 WWOA conference Grand Geneva Resort
2018 operators of the year award

Lake Michigan region

Holly Blazer (Presenter),
Craig Lawniczak (Award Recipient)

North Central region

Eric Donalson (Presenter),
Casey Jakubek (Award Recipient)

Northwest region

Mike Magee (Presenter),
Jaden Ebert (Award Recipient)

West Central region

Steve Reed (Presenter),
Dan Burns (Award Recipient)
2018 operators of the year award

Southern region

Josh Voigt (Presenter),
Kevin Bliss (Award Recipient)

Newcomer of the year

Paul Nehm (Presenter),
Matt Seib (Award Recipient)
George F. Bernauer 2018

Pete Albers, Dean Falkner, Rusty Schroedel, Lamont Albers, Harry Mathos, John Leonard, Gary Hanson

Kolby Crabtree 2018

Jeff Bratz (Presenter), Brenda Miller (Wife of Jim Miller receiving award in honor of Jim), Thomas Miller (Son of Jim Miller receiving award in honor of Jim), Rick Mealy (Presenter)

Past Bernauer

Gary Hanson (Presenter), Rusty Schroedel (Award Recipient)

Past Kolby Crabtree

Mike Raynovic, Kay Curtain, Paul Lange, Brenda Miller (in honor of Jim Miller), Gary Hanson, Rick Mealy

Past service members

Pete Albers, Lamont Albers, Tom Mulcahy, Caroline Strackbein, Dean Falkner, Wade Peterson, Gary Hanson, Dale Neis, Randy Herwig

Honorary members

Pete Albers, Caroline Strackbein
Past presidents

Rich Boden, Pete Albers, Lamont Albers, Jim Thalke, Caroline Strackhein, Kelly Zimmer, Dean Falkner, Kay Curtain, Gary Hanson, Sharon Thieszen, Randy Herwig, Kevin Freber, John Leonhard, Dale Neis, Wade Peterson, John Bond

Lifetime members

2019 board of directors

Don Lintner, Jeff Smudde, Rick Mealy, Josh Voigt, Jeff Simpson, Sue Leith, Jeff Bratz, Jeremy Cramer, Ryan Hennessy
Service award

Lamont Albers (Presenter),
Dean Falkner (Award Recipient)

Membership award

Jeff Bratz (Presenter),
Jeff Simpson (Award Recipient)

Lifetime members 2018

Kurt Wood, Gregory Kozelek, Jeffrey Williamson, Richard Knoelke, Rusty Schroedel, Wade Peterson
Scholarship recipients

WWOA scholarship

Sue Leith (Presenter), Bradley Prust (Award Recipient)

NCL scholarship

Mike Raynoveic (Presenter), Daniel Lefebvre (Award Recipient)

Lake Holcomb hosts

West Central August meeting

Meeting was called to order by Chair Steve Reed. A special thank you to the City of Lake Holcomb for their hospitality and to all other Operators and volunteers for all the time given to the WWOA West Central group. Your participation and time is greatly appreciated.

Speakers for the meeting were as follows:

1. “Nutrient Removal” presented by Kay Curtin with WRWA (kcurtin@mrwa.org, 715-340-8827)

2. “Water Conditioners” presented by Bjorn Pearson with HydroFLOW Midwest (bjorn@hydroflowmidwest, 612-239-4917)

3. “GIS for Collection System Operation” presented by Todd Halvorson and David Wierzba with MSA (thalvorson@msa-ps.com, 608-355-8876 – dwierzba@msa-ps.com, 715-304-0302)

4. "Industrial Waste" Presented by Kevin Christensen (kchristensen@probstgroup.com, 262-349-0434)

5. “Electrical Safety for the Municipal Worker” presented by Todd Olmschenk with Electric Pump (todd@electricpump.com, 612-803-3885). The Meeting ended with tour of the Lake Holcomb Treatment Facility, Thank you! Ø

Submitted by: John Selvog
Call for technical papers 2019

The WWOA Technical Program Committee is requesting your assistance in developing the Technical Program for our 53rd Annual Conference to be held October 8 – October 11, 2019, at the KI Convention Center, Green Bay WI which will be our conference site.

Technical papers are being solicited at this time for the Technical Program. The Committee is especially encouraging members actively involved in the day-to-day operations of a wastewater facility to prepare and present technical papers at the Conference. The following are major subject areas that presentations may cover. Papers dealing with other topics will definitely receive consideration/use by the Committee.

1. Activated Sludge
2. Biosolids: Handling
3. Nutrient Removal
4. Process Control and Automation/SCADA
5. Design Concepts and Implementation
6. Staff Training and Development
7. Utility Supervisory Skills
8. Computerization & Internet
9. Industrial/High Strength Waste Treatment
10. Maintenance Practices & Methods
11. Safety & Health Issues, Personnel & Process
12. Regulation, Watershed Issues
13. Laboratory Practices
14. Plant/Process Upgrades
15. Utility Benchmarking
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Donald J Lintner  920.418.3869
N2511 State Road 57, New Holstein WI 53061
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word file for 3-submission at wwoa.org

Please consider responding to this request or forwarding it on to someone who may be interested in participating. The strength of the WWOA is in the sharing of ideas and information. The success of this organization is dependent upon you the individual member. Please consider making a difference!

Sincerely, Donald J Lintner
Vice President 2019 Technical Program Committee Chair
53rd Annual WWOA conference submittal form
Oct. 8-11, 2019 KI Convention Center, Green Bay

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2018 Operator’s Competition sets a new bar

We had SEVEN (7) teams this year, and very nearly had NINE! I was pretty certain that that marked a new high for the number of teams, but Jim Thalke kindly corrected me that in his first year chairing the Competition, he also had 7 teams. So, we at least tied the high mark! And a few short years ago we didn’t even have the minimum 3 teams to hold the event.

This was a big year for the Operator’s Competition as we switched from Saddle “T”s to Inserta-Tees. had specially designed “Top Ops 2018” ball caps (thanks Jeremy Cramer and Donohue!) made for the members of the winning team.

In addition, with the help of the regions, who ponied up for it, we initiated the Jim Miller Memorial travelling trophy for the winning team/region. Special thanks go to Josh Voigt and Chris Lefevre for making that happen.

This event does not happen without two critical elements: enough teams willing to compete and the vendors who sponsor us. The equipment we go through (pipe, saw blades, Inserta-Tees, etc.) all cost money, money that we do not have in our budget. Without the help of sponsors like ADS, JF Ahern, Core&Main, Ferguson Waterworks, Mulcahy-Shaw Water, North Central Laboratories (NCL), and Xylem Inc (Flyght), this event simply would not happen, so please thank these folks when you run into them.

We also need the teams, of course. This year we had two teams each from the Southern, Southeast, and Lake Michigan regions and one team for the North Central region.

Next year, I’d really like to see a team from West Central (Not to call you out or anything, but …Tom Grunewald and Gary Newton…can I count on you guys?). And how about a team from the Northwest? Can we make it to 10 teams? That would make for an awesome competition. Wouldn’t that trophy look great in YOUR region?

OK, so you probably want to know who won. Well, The Deuce is Loose from the Southern region bested the Rag Babies of Southeast region by a mere 6 seconds to win the inaugural Jim Miller Memorial Trophy.

The UnderDogs out of the Southeast Region came in 3rd place. Think about it…a mere 6 seconds in overall time separated the top two teams. That’s the time it takes to do any number of miniscule tasks.

A hearty thank you also goes out to the event judges who volunteered their time to manage the different events. I’m looking forward to next year already!
2018 operators competition winners

1st place by 6 seconds was The Deuce is Loose from Southern Region.
From left are: Dustin Trewyn, Brian Skaife, and Casey Kleven

2nd place is the Rag Babies from Southeast Region. From left are: Ben Huffman, Bob Biedrzycki, and Tyler Wollersheim

Third Place: 3rd place team is the Underdogs from Southeast Region. From left are: Mark Knuth, Emilio Gonzales, and Owen Van Swol
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The North Central Region held its fall meeting on September 19th. The meeting was hosted by the Expera Paper Company and was held at the Lakeside Center Theater at Nicolet College in Rhinelander. 50 people were in attendance along with 13 vendors. Andy Ott opened the meeting by thanking all in attendance for coming and thanking Expera Paper for their help. He also thanked our vendors for their support and encouraged everyone to visit them during breaks.

Nick Janous from Nexom was up first with his presentation describing the BluePro up flow recirculating sand filter for low level phosphorus compliance. Nick highlighted the difference between a traditional sand filter where the media acts as a physical filtration system, and the BluePro system where the media is impregnated with ferric chloride and adsorption of phosphorus directly on the sand particles becomes as, or more important, than physical separation. Ultra-low phosphorus limits can be met using multi-pass systems as needed with approximately 90 percent of phosphorus loads removed in each pass through their reactive filtration process. The process is also capable of removing heavy metals such as lead and zinc, and can even be configured for denitrification with the addition of a carbon source to promote bacterial growth in the media. From a maintenance perspective the system benefits from a short list of moving parts and has minimal maintenance requirements. A blower powering the air lift pump that recycles the sand and a chemical feed system to supply the chemical are the only major ticket items. Due to abrasion, it is recommended to replace the airlift tube on a regular 5-year schedule, which can be done without removing the filter media.

Alex Tabb with Smith and Loveless gave the next presentation, “Lift Station Design 101”. Alex did a great job providing a very general review of lift station components, options, and design considerations. Among the most important design considerations he covered were flow rates, wet well sizing, start times, horsepower, maximum lifts on suction lines, and pump efficiency. He encouraged operators to be involved in the design and selection process to help ensure what looks good from an engineering perspective matches real life operational conditions and site limitations.

Alex also covered level sensors, motors, VFDs, and the differences between the three most common lift station designs: submersible, flooded suction, and above ground suction pumps. Each system has its pros and cons, and many operators tend to favor one design over the other based on personal experience, but each type should be evaluated on its own merits when considering new installations or replacement projects.

After a short break to allow people to stretch their legs and visit our vendor displays, Wisconsin State Representative Patrick Snyder gave a presentation on WDNR Water Regulations and State Water Resources. Representative Snyder represents the State’s 85th Assembly District, covering Wausau and the Villages of Hatley and Elderon. He left a career in radio as the morning host of AM 550 WSAU to first serve on Congressman Sean Duffy’s staff and then eventually as a State representative.

Representative Snyder covered the two most important laws at the Federal level dealing with water protections, the Clean Water Act and the Safe Drinking Water Act, highlighting their developmental history over time, and the difference in their specific applications. He also briefly covered applicable state regulations such as the various Administrative Codes, NR 100-199, and NR 300-399, and State Statutes like Chapter 281.

Among the concerns to operators who end up running and maintaining lift stations, Alex identified operator safety, low maintenance costs, low operation costs, standardization of design, availability of spare parts, long life, and manufacturer reputation as the most important. He also stressed the importance of a new emerging issue affecting almost every system, flushable wipes and other non-woven sanitary products, that are forcing operators and communities to address problems associated with plugged pumps.
continued from page 35

He then covered the SDWA in detail, reviewing summary statistics from the 2017 Consumer Confidence Reports required of all public water suppliers in the state. He highlighted that of the 11,451 water systems in Wisconsin, more than in any other state, 99% were in compliance. Of the few violations that did occur, the most common were associated with nitrates, radium, e. coli, and arsenic. He ended the talk with an outline of the DNRs stepped enforcement policy, describing the difference between Notices of Non-compliance, Notices of Violation, and referrals to the Department of Justice.

Next up was Nick Lindstrom, DNR Wastewater Engineer out of the Wausau Service Center. Nick replaces Nathan Wells who moved back down to the Madison area and now works out of the Fitchburg Service Center. Like Nathan before him, Nick will be the first point of contact for many of the wastewater permit holders in the WWOA North Central Region.

Nick stated that the Collection System Study Guide is available. One operator for each system must be certified in Collection Systems by the end of the current five-year permit term. The study guide focuses heavily on safety, such as which PPE is required, working in confined spaces, and working near traffic. Specific components of the collection system, such as FOG and grease traps, are also covered. The study guide also focuses on topics such as SCADA systems, corrosion, flow calculations, and sanitary sewer overflow emergency response plans. The Anaerobic Treatment of Liquid Waste and Total Nitrogen study guides will be released soon.

Nick stated that the scoring system for the Environmental Loan Program now includes a green infrastructure component. Projects will be scored on whether they include green practices.

For information on Pollutant Minimization Programs (PMP) and Source Reduction Measures (SRM), please see the DNRs website.

Lastly, the final version of the Wisconsin River TMDL is expected to be released in December 2018. Site-specific discharge limits may be released midway through next year. After Nick’s presentation WWOA NCR Steering Committee Chair Andy Ott presided over the regular business meeting. The minutes are as follows:

Andy Ott opened the Business meeting at 11:45. Andy thanked everyone for coming to the meeting, especially Tom Emond and the Expera staff for hosting the meeting and providing the tour.

Andy introduced Don Lintner, Director on the State WWOA Board, and Chair of the Operator Training Committee and the Spring Biosolids Symposium Committee. Don spoke on a number of State WWOA topics, highlighted upcoming meetings, and encouraged increased membership activity. Ken Bloom, WWOA NCR Treasurer, presented the most current financial statement. As of the date of the meeting, the region has $4,717.02 in our checking account and $679.01 in the escrow account held in trust by the State WWOA.

Andy reminded the group of the awards that are presented each year at the State WWOA Conference. WWOA NCR Secretary Chris Helgestad asked those in attendance to consider nominating operators in our region for next year’s Operator of the Year award.

Andy highlighted the scholarship and tuition reimbursement opportunities offered by the State WWOA. Andy encouraged any non-members present to consider membership in the WWOA and highlighted the membership benefits included.

Andy encouraged those present to consider hosting a future WWOA NCR meeting. Steering Committee members are available to provide as much or as little help as needed. Andy encouraged those present to like and follow the region’s Facebook page.

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Andy opened the floor for any new business. There being none, he adjourned the meeting at 12:00.

After the business meeting Ken and Andy recognized the vendors and thanked them for providing a number of raffle items for our drawing. The region appreciates all that our generous vendors do for us. Raffle items were provided by AgSource, Vacuum Pump and Compressor, Northern Lakes Service, Wisconsin Pump Workers, LAI, and Crane Engineering Sales. A few clothing items were provided by the region.

Chris Helgestad collected names for those non-members in attendance that wished to be included in the drawing for our region’s new membership sponsorship. Congratulations to Rob Anderson of the Phelps Sanitary District and Nick Lindstrom of the Rhinelander DNR Service Center for winning new membership sponsorships.

Lunch was served after the raffles and time was provided for attendees to visit with our vendors.

After lunch Autumn Fisher from CLEARAS presented a talk on their Advanced Biological Nutrient Recovery system. Autumn described the system in terms analogous to the activated sludge wastewater process. In a similar setup, native algae are added to a flow of secondary wastewater effluent in a mixing reactor. This Mixture Flow then enters a series of clear pipes called a photo-bioreactor where the algae are exposed to a combination of natural and artificial light. In this stage the algae quickly consume available phosphorus, nitrogen, and carbon dioxide.

In the final Separation phase, the algae and clean wastewater are separated. A portion of the algae are returned to the mixing phase and the excess algae are harvested. CLEARAS is able to help communities market excess algae and recover a portion of their operating costs. Algae and their various components are used in a variety of manufacturing processes including biofuels, pharmaceuticals, feed stocks, and plastics.

In addition to simultaneous phosphorus and nitrogen removal, Autumn highlighted additional benefits including secondary TSS and BOD removal, no extra sludge production, modular and scalable installation, increase in effluent D.O., and no hazardous chemicals. Because the algae need both nitrogen and phosphorus in specific ratios, treatment efficiency depends on a proper balance, with supplemental addition of nitrogen as needed.

The last presentation of the day was given by Tom Emond of Expera Specialty Solutions in Rhinelander. Wausau Specialty Papers and Thilmany Papers were purchased by KPS Capital Partners to form Expera Specialty Solutions in 2013. The Rhinelander mill produces primarily coated food grade paper used in food packaging products like popcorn bags, takeout bags, and pan liners.

The wastewater treatment plant at the Rhinelander location receives 6.64 MGD from the mill and includes two different treatment trains. One train includes primary clarification only and one train includes secondary activated sludge without primary clarification. The combined biosolids generated by these two systems are comingled and dewatered through a press. There is no onsite bio-solids storage, so field applications are made daily, 365 days per year.

Tom highlighted some of the challenges operating the wastewater plant, temperature and filamentous bacteria being the major ones. They do operate heat exchangers in the summer months to reduce the temperatures in the basins, but filaments can be a problem all year round due to high amounts of organic acids present in the waste stream coming from the mill. A relatively low sludge age of just 3 days on the activated sludge portion of the system limits them to some extent. Like everyone else in Wisconsin they are also concerned about new lower level phosphorus limits. After his presentation, Tom reviewed directions to the paper mill and safety instructions for the 20 attendees wishing to tour the wastewater plant. Once on site everyone was divided into three smaller groups and walked through the wastewater plant by Expera staff.

Submitted by Chris Helgestad, WWOA NCR Secretary
Oconto WWTP hosts August Lake Michigan district meeting

The August 16th Lake Michigan District meeting at the Oconto WWTP was another successful meeting with approximately 55 operators and septage haulers, along with 13 equipment and process vendors. A special thanks to Peterson & Matz for sponsoring the treats during the breaks.

The first presentation of the day was by Mike Raynovic of North Central labs, who spoke on BOD Troubleshooting in the Lab. Mike discussed multiple laboratory instruments used to determine BOD. He offered several examples of laboratory instruments and method issues that he has seen over the years in his work assisting laboratory personnel. Mike went over troubleshooting exercises for BOD test failures. Lastly, Mike spoke on laboratory instrument maintenance and the importance of keeping accurate maintenance records in the lab.

Next on the agenda was Bryce VandenBoom of Evoqua. Bryce's presentation was titled Biological Nutrient Removal (BNR) in Multi-Channel Oxidation Ditches. Bryce began the presentation by discussing the differences between single and multi-channel oxidation ditches. Bryce then went on to explain what is simultaneous nitrification denitrification and the benefits. In addition, Bryce showed how biological nutrient removal works and provided things to change to improve removal and reduce costs. Bryce finished his presentation by walking through different case studies.

Jenny Pagel 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 Dick Sachs. First off, for the DNR update, applications for the November 7th Operator Certification exams are currently being mailed out. The application deadline for the Operator Certification exam is October 10th.

The second item was that there will be a Collections System subclass exam in November and the study guides will be released shortly. Recent staffing additions made up the third WDNR update item.

Dick announced that Shaun Shield recently started working as the Limits Calculator for the Northeast Region, filling the position previously held by Jim Schmidt.

Laurel Last recently started working as a part-time Wastewater Specialist in the Green Bay office. Laurel will be handling some of the general permits and drafting some permits. The fourth and last item on the WDNR update was updates regarding TMDLs. The draft report and waste load allocations for the Upper Fox/Wolf TMDL were released in June. A stakeholder meeting on the draft TMDL was held on July 11th; the video recording of the meeting can be found on the WDNR website. A public informational meeting and comment period will be conducted within the next few months, after which the TMDL will be sent to the EPA for approval. Following the DNR update, Jeff Smudde gave the WWOA Board of Director’s update.

The third presentation of the day was by Sean Meracle of Sherwin-Williams. Sean's presentation was titled Advanced Coatings Technologies for Wastewater Treatment Applications. Sean described the typical goals in coatings, which are more severe conditions, less down time, and longer service life.

Sean listed the old methods of wastewater coating systems and the new systems, based on the advanced technologies. Sean then went into drivers for pushing the advanced coating technologies. Sean ended his presentation by explaining the pros and cons of the different new advanced coating technologies.

The last presentation of the day was by Leo Kucek of Applied Technologies. Leo’s presentation was titled

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Assessing the Health of Your Wastewater – Conducting a Plant Capacity Evaluation. Leo started off by stating the typical procedure for conducting a capacity evaluation and basic treatment plant operation methods with and without BNR processes.

Leo then went on to discuss flows and loading results and how the data affects the engineers performing the evaluation. Leo explained some graphs and what the data tells us. Leo showed the results of the capacity evaluation.

Lastly, Leo finished the presentation by going through the conclusions that were developed, while performing the capacity evaluation.

Adam Filz, the Head WWTP Operator, gave an introduction of the WWTP by describing the flows, loadings, and treatment processes.

A plant tour followed the plant introduction.

The next meeting will be at Denmark on December 13, 2018.

Special thanks to City of Oconto’s WWTP Staff for hosting the meeting.

Minutes submitted by Josh Steffeck, Lake Michigan District Secretary/Treasurer

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Whitewater Wastewater hosts south and southeast regional meeting

The joint meeting of the South and Southeast Districts of Wisconsin Wastewater Operators’ Association (WWOA) was held on August 29, 2018 at 841 Brewhouse in Whitewater, WI, with the Whitewater Wastewater Treatment Plant (WWTP) hosting the meeting. There were 89 members, 8 non-members, and 15 exhibitors in attendance.

Cameron Clapper, Whitewater City Administrator, provided a welcome message to the attendees. He provided interesting facts about Whitewater and said the idea behind the movie Animal House was thanks to John Belushi and his experience at UW-Whitewater. He mentioned that UW-Whitewater is an excellent partner to the community. Cameron expressed his appreciation for the work that WWTP operators do for their respected communities. He closed with a thank you to attendees for coming to Whitewater for the meeting.

Mark Vuksan from Xylem provided a presentation on the IQ SensorNet system that is in use at Whitewater’s WWTP. He indicated the advantage of this system is that it can allow for one cable to be run from the various sensors back to the primary logic controller (PLC). This eliminates the need to run power and 4-20 milliamp signals back to each controller, which was typical in the past. Mark showed the configuration of the system that is currently installed at Whitewater’s WWTP.

He described how the equipment is protected from lightning strikes and high voltage spikes, and provided examples of facilities where lighting struck and the sensors were not damaged. The system is offered with optical dissolved oxygen, turbidity, total suspended solids (TSS), nitrate (NO3), UV spectral absorption (which can provide SAC, COD, BOD, DOC, TOC, Nitrate, Nitrite, NOx, UVT, and TSS measurements), and sludge level measurement sensors.

The next speaker was Bob Boyle from RGH and Associates. He provided a presentation about high-visibility products provided by OccuNomix. He presented several of the products offered by Occunomix and passed them around the room.

Jim Orr from Dixon Engineering discussed coatings and concrete repair in the wastewater industry. He provided a background on how concrete can deteriorate and how pH of the concrete can impact repairs. He discussed several tests that should be completed on concrete prior to repair coatings being applied. Jim discussed methods for rehabilitation of concrete structures and showed examples of rehabilitation projects he has been involved with. Jim closed by stressing the importance of occasionally reviewing the condition of structures that are not always easily accessible.

Amy Garbe from the Wisconsin Department of Natural Resources (WDNR) provided a brief WDNR update. She indicated the collection system operator study guide is now posted to the WDNR website. The applications for the exam sign up will be posted soon and WDNR will have an October 10 deadline for submittal. A public hearing on the Wisconsin River total maximum daily load (TMDL) was recently held. Public comments will be accepted until September 19. Amy reminded communities to review their permit application dates and submit required testing, if needed. She also reminded communities to contact WDNR if they have had flooding-related issues.

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-- Greg Lemahieu, Plant Operator at Village of Oostburg
Next an Exhibitor raffle was held and the Exhibitors were given a minute to tell us more about their services.

Business Meetings:
The South Region held their business meeting. Josh Voigt called the meeting to order. The minutes from the Monroe meeting were approved. The treasurers report was approved. Elections of officers for 2019 were held. Marc Zimmerman was re-elected as Treasurer, Cody Shoepke as Chair, Randy Langer as Vice Chair, and McKayla Keisling was elected as Secretary. The membership was reminded that the South Region has a $250 scholarship available that members in good standing can use for continuing education.

The Southeast Region held their business meeting. Nate Tillis, City of Waukesha, Chair, called the meeting to order. The minutes from the Racine meeting were approved. The treasurers report was approved. Elections of officers for 2019 were held. Mike Penkwitz was elected as Chair. Kathy Bates was elected as Vice-Chair and Wayne Castle was elected as Secretary. Paul Gagas is the Treasurer. Jeff Bratz, WWOA President, provided an update about the Annual Conference held October 16-19 at Lake Geneva. A reminder about the Regional meeting will be at the Annual Conference. Three teams have registered for the Operator's Competition. The next Southeast Region meeting is February 12, 2019 in Allenton.

Following lunch, Josh Gable from Centrisys presented on sludge dewatering and thickening. Josh started with a brief overview of sludge dewatering technologies. He then described the various components of a centrifuge and how they work. The two major moving components of the system are the bowl and the scroll. Variable frequency drives can be used to optimize the centrifuge to optimize energy efficiency and minimize wear on the unit. The scroll speed can be adjusted for the cleanliness of the centrate or the solids content of the cake. Influent flow can also be adjusted to alter performance. Josh showed data that demonstrated centrifuges are becoming much more energy efficient compared to older models. Josh then talked about thickening centrifuges, which are often used for thickening solids prior to anaerobic digestion or thickening sludge prior to land application.

Nathan Cassity from Donohue presented an overview of the recent Whitewater WWTP project. He provided an overview of the key elements of the projects and drivers behind the project which included age of facilities, rotating biological contactors (RBC) shaft failures, code issues, and future regulatory requirements. The largest component of the project was a new activated sludge secondary treatment system which replaced the RBCs. The project also included replacement of electrical switchgear, improvements to preliminary treatment and the digester complex, and upgrades to the administration and laboratory building.

The meeting was adjourned and the day ended with a plant tour of the Whitewater Wastewater Treatment Plant. A big thank you to Whitewater for hosting the day, to Donohue and Associates for sponsoring the morning pastries and refreshments and to the Exhibitors for providing prizes for the raffle.

Submitted by Randy Langer, Southern District Secretary and Mary Ellen Mortensen, Southeast District Secretary.
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