



Wisconsin Wastewater  
Operators' Association

# The Clarifier

WISCONSIN WASTEWATER OPERATORS' ASSOCIATION, INC.



City of Marshfield Wastewater Treatment Plant

**50th Annual W.W.O.A. Conference**

October 11-14

LaCrosse Center, LaCrosse, Wisconsin

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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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## Presidents message: Time flies when you're having fun!

How can it be? Seems like just yesterday that I was elected to the Board of Directors and now after a blink through the ranks I'm writing my first President's message for the Clarifier! Where does the time go? I really can't even put down in words how honored and excited I am to lead the organization this year, especially being the big 50th Anniversary year. Just think, the first Annual Conference was held in Appleton for the initial organization, the WWWOC, in October 1967. Okay, wait a minute, if you do the math of adding 50 years to 1967, we shouldn't be even be talking Conference L (roman nomenclature for 50) just yet, right? Well, if you really struggle to comprehend this, never fear there has been a 50th planning committee formed who will reassure you that 2016 is correct year for the 50th and they have been brainstorming ideas to make it a memorable event in LaCrosse next October! I will direct all



50th anniversary questions to Dan Busch, who evidently has spent way too much time thinking about WWOA history and this math equation while out he is in the woods! (Feel free to catch Dan sometime for background on that story.)

Only a few short months back we wrapped up the 49th Annual Conference which included an entertaining keynote speaker, Dr. Stuart Robertshaw, abundance of informative

technical sessions, awesome cash prizes with social time, and industry leading expert, Dr. Leon Downing, who spoke at the farewell breakfast. All of these components were set in place by the then Vice President and Technical Committee Chair and your new President Elect, Sharon Thieszen. I must say great job and applaud Sharon for all of her diligent efforts in organizing such a smooth flowing conference. An abundance of positive remarks were received and reflect how conscious she was with all the details. Congratulations to our new Vice President, Jeff Bratz, who has already taken the reigns and has the call for paper out and has selected a fine group of individuals to help review and select next years' technical sessions in February. I also want to congratulate and welcome our newly elected director, Kris August. I look forward to working with Kris and have his knowledge on the board!

As I have already mentioned, the Call for Papers for the 2016 Technical sessions was mailed out and is posted on the WWOA website, so please get your submittal(s) in as early as possible and /or pass along the Call for Papers to someone whom you feel might be interested in presenting at the 50th WWOA Annual Conference. The same goes for the any of the award submittals; it is never too early to turn in nominations for any of the awards for someone who you know that deserves to be recognized for what they do/ have done with the industry. Visit the WWOA website for award information and nomination forms. I always find the awards banquet a fulfilling time to see the recognition of these special individuals. Congratulations to all of the 2015 WWOA award recipients!

I believe WWOA offers more than just training and credit opportunities; it also offers the opportunity to build an invaluable network of wastewater professionals. Becoming a member has allowed me to build knowledge, experiences, and ideas that have complimented my career in the wastewater industry. During my presidency term I hope to continue enhancing these attributes by attending at least one function in every region. The time spent associating with the leaders (past and present) that I have met and worked with at the regional and state WWOA levels leading to my Presidency have been priceless As I do know a fair share of the membership, I am going to emphasize my goal to meet and talk to those I don't and extend my network of experts. Likewise, if by chance you see me out and about, and even if it not WWOA related, please feel free to stop me and introduce yourself. I spend a fair amount of my spare

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time running my son Sterling (14) and daughter Shelby (12) around the state for their numerous sporting events. So if you happen to see their names at any youth athletic event, take a look to see if by chance I'm around! Whenever and wherever, I welcome your feedback of ideas, concerns, or questions.

Acclimating to the President role has been especially seamless with outstanding predecessors like Kelly Zimmer, Kevin Freber, and Wade Peterson. A special thanks to them for their guidance and comradery leading me through each step on the board. Lastly, I want to recognize Karen Harter for all of the time and efforts she dedicates to her role as the WWOA Executive Secretary. We are very fortunate to have her skills and assistance in keeping the organization on track.

As another successful (hopefully!) deer hunting season has passed, my favorite season of winter will be here really soon, if it hasn't made an appearance already. I am hoping that we can enjoy a white Christmas this year and everyone has safe and happy holidays!

Your 2015-2016 President, Lyle Lutz

## Lynda Bentley Memorial 1945 – 2015

Lynda E. Bentley, age 70, passed away on Friday, September 18, 2015. She was a graduate of the University of Wisconsin – Madison. She was employed by the Green Bay Metropolitan Sewerage District for 32 years.

Lynda Bentley started her career with Green Bay Metropolitan Sewerage District (GBMSD), (now known as NEW Water), in December 1969 as a lab technician. In addition to performing the normal lab procedures and record keeping necessary operate the wastewater treatment plant, she was part of a special team to conduct and perform water quality tests for an innovative pilot plant. The purpose of the pilot studies was to confirm the treatability of normal domestic wastewater stream from Green Bay and other neighboring communities with industrial wastewater from two local paper mills. These studies eventually provided a basis for the design of the wastewater treatment plant built in the 1970s at a cost of over \$70 million dollars. Lynda was responsible for water quality control during her

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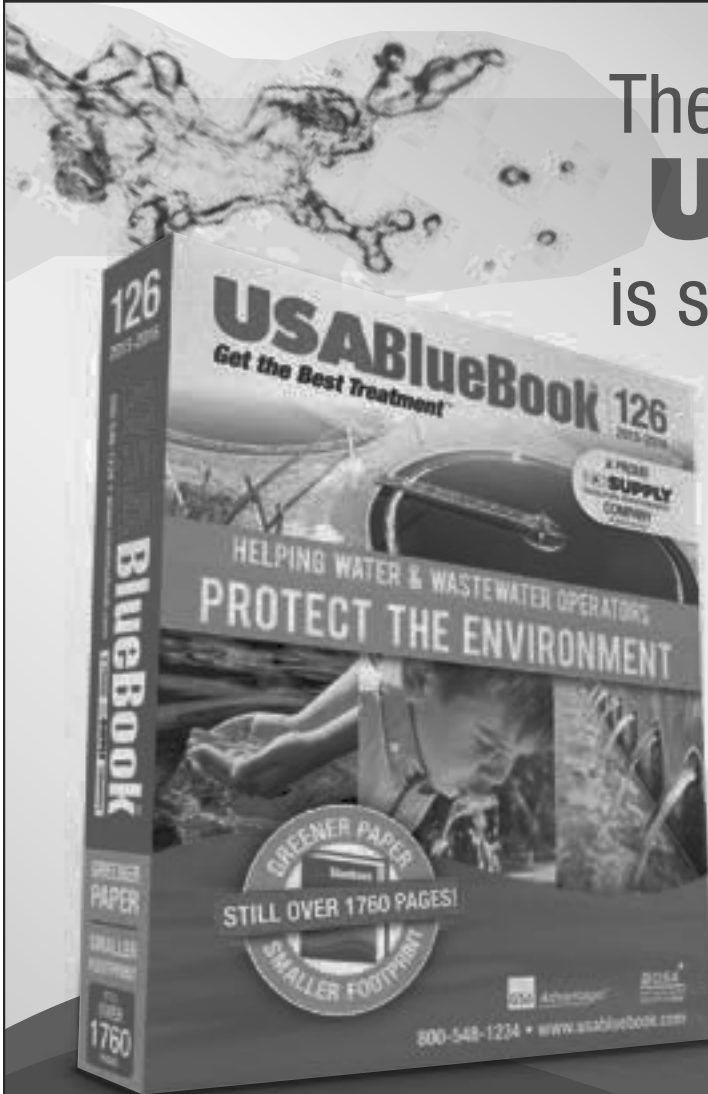
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entire career at GBMSD. In 1976 Lynda was promoted to Laboratory Supervisor in the new state of the art laboratory. In 1983 she became Quality Control Section Manager and in 1987 she was selected to become Pretreatment Program Manager and served in that position until her retirement in December of 2002.


Lynda became very active with WWOC/WWOA joining in 1977 and becoming a Life Time Member in 2002. Like many of us at GBMSD she was guided and encouraged by Bob Deering and Bob Thompson. Lynda was always open to sharing her time and talent to enhance the WWOC/WWOA organization. If you review the history of the WWOA's newsletter, The Clarifier, you will see Lynda's contributions to the newsletter over her ten years of service on the editorial staff. Lynda served as lead Editor from 1980 – 1991. She became part of a Clarifier Ad Hoc committee in 1980 when then editor Al Winter turned the reins over to others. Lynda was responsible for implementing many of the changes from the committee. The Clarifier dramatically improved from a few page newsletter to a magazine with over fifteen pages. Advertising was added in 1984 along

with President's messages and plant pictures and stories. The magazine content focus moved to knowledge sharing in our profession and the expansion of the newsletter also included job postings, meeting notices, training opportunities, industry awards, operator recognition, and photos of various events and eventually advertising as a source of funding. Additionally, the Clarifier was the WWOA's primary means to keep its members informed through published meeting minutes.


Lynda should be remembered for devoting her time and talents to enhancing the Clarifier and contributing to the publication that provides the communication to connect all of our members. During Lynda's tenure the entire publication was put together by the "cut and paste" method which was very time consuming and required a special skill and talent to make it come out right. She trained many of us in the process from which we could never deviate. Lynda was recognized for all her early efforts with the WWOA Service Award in 1987. She shared the award with her good friend Carol (CJ) Townsend who was her "right hand lady" during the early 80's with both GBMSD and the Clarifier.

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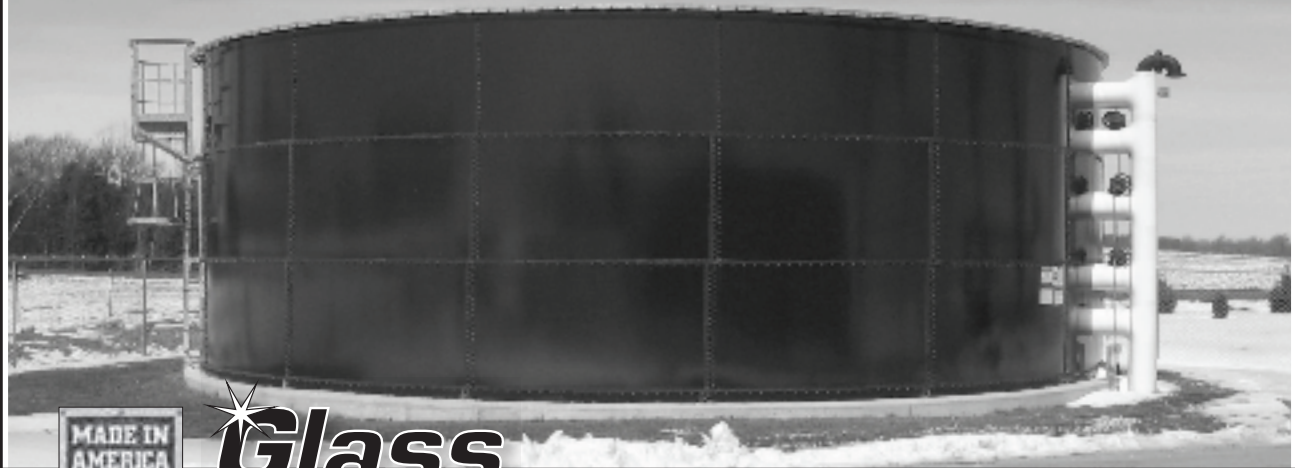
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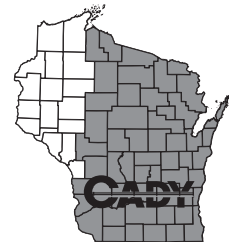
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It is important to note that Lynda helped numerous young professionals as they started their careers at GBMSD/ New Water. Staffing levels increased from 25 to over 100 personnel to operate the new plant. She was always willing to mentor peers to assure they understood the values of QC and process controls for a well-run WWTP.

She displayed the same talent when it came to mentoring new members of WWOC/WWOA. I don't believe there were many (if any) years when Lynda wasn't in attendance at the Annual Conferences. You have to appreciate she was a pioneer women in a profession and organization that was very male dominated at the time. Lynda could hold her own and was instrumental in promoting and communicating Laboratory / Quality Control / Pretreatment concepts.

Lynda, the members of WWOA appreciate your years of dedication, patience, and leadership in helping to advance our profession and organization.

Joe Gehin  
Dan Busch



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Looking Forward

# VEGA

## City of Marshfield wastewater strives for a clean environment

By Sam Warp Jr., City of Marshfield Wastewater Superintendent

The City of Marshfield is located near the center of Wisconsin. As the economy has changed, so has the outlook used to meet the new challenges in wastewater treatment operations and maintenance. As the community was experiencing population and commercial growth in the 1990's, it was evident that a new wastewater treatment facility was needed. Because of space limitations, a new site was chosen on the southeastern side of the community. In the summer of 2000 the current facility began operations. The old plant was plagued with huge hydraulic swings which compromised the treatment quality. The soil type within the city and the older residential districts was predominantly clay and the inflow/infiltration (I/I) naturally found its way to the sand-bedded sanitary pipes. Therefore the design focus for the current facility was on handling the large volume swings due to a continuing I/I issue. This design has proven to be very effective at meeting the WPDES permits limits.

The process train starts with three screw pumps that lift the influent from the wet well 33 feet into the influent channel.



*Screw pumps*

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*continued on page 12*

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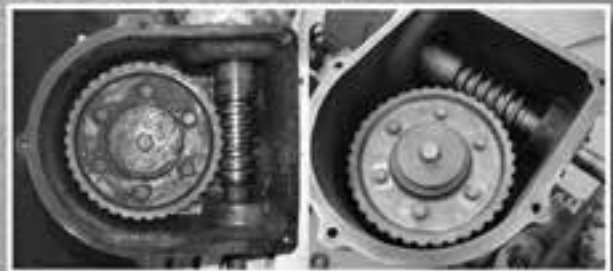
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Fine step screen

*continued from page 10*  
 and drops into a continuous bag in the dumpster. The screened influent flows to a splitter box, where the volume, pH, and temperature are measured and sampled. From there it's sent to the oxidation ditch where two aerators both mix and aerate the mixed liquor down the 400 foot long channels.

As the flow spills over the discharge, ferric chloride is added for phosphorus removal. It migrates to the three final clarifiers where the clean water flows over the V-notch weirs and is sent to the effluent cascade aerator. Here the effluent is sampled and flow measured before being discharged to Mill Creek. The solids are returned to



Final clarifier

the oxidation ditch except for three days a week when a portion of them are sent to the gravity belt thickener (GBT). The thickened biosolids are then pumped to the biosolids storage tanks.

Some aspects of the plant are uncommon, but not unique. There are two oxidation ditches, but because the plant is still at roughly 50% capacity only one is used at a time. Each one is operated for five years and then alternated. There is no grit removal. The sand and gravel settles in the oxidation

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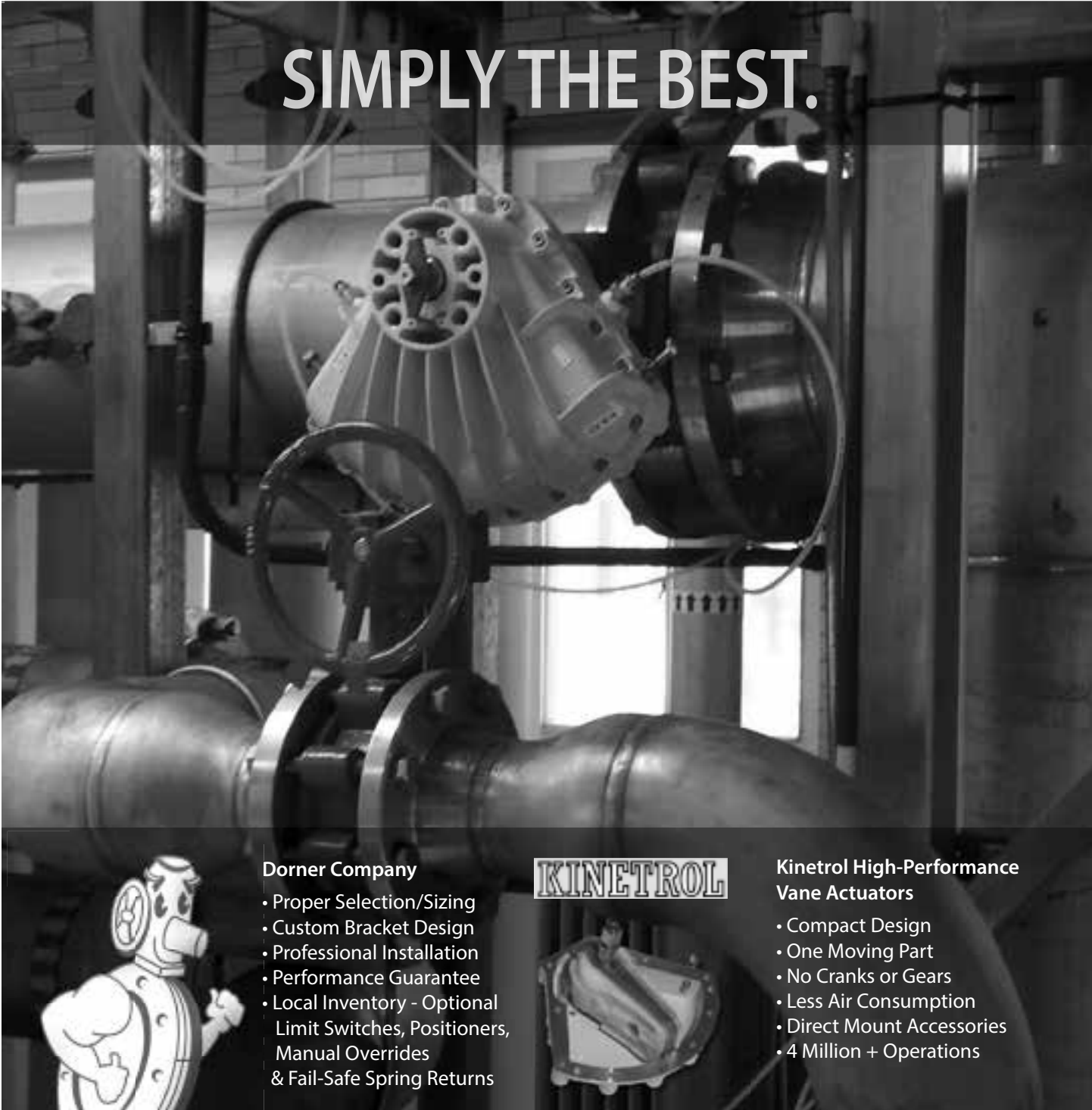
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Cascade aerator

continued from page 12

ditch and are removed after the channel is drained. These remaining solids are tested like any other biosolids and land applied according to the nutrient value. Because it's mainly sand, the rates are not too restrictive. We work closely with the local Agricultural Research Station on this and hire a local contractor to remove the solids from the oxidation ditch. Typically they charge less than \$2,000, so we have a budget of \$400 per year for grit removal.

There is no WAS tank for storage before the gravity belt thickener. Every Monday, Wednesday and Friday a portion of the RAS is directed to the GBT. Those thickened solids

are sent to the two large biosolids storage tanks for land spreading. The remaining four days the RAS returns



Gravity belt thickener (GBT)

to the ditch as normal. This makes the RAS and MLSS concentration vary slightly every day which is easily handled with our long oxidation ditches. The cost savings of utilizing these oxidation ditches was realized in less initial capital and less to maintain on a daily basis. This same saving theme was evident throughout the entire plant design. We transitioned from an old technology plant utilizing up to ten separate processes down to only five more efficient and less cost processes.



Biosolids storage tanks

One of the greatest challenges that have been overcome in the recent past was the compliance issue with copper in the effluent. Since the early 90's, Marshfield has had difficulty consistently meeting the variance of 42 ug/l in the discharge to Mill Creek. Sources were investigated such as having all the major Industry sampled. So were access points like lift stations, collection manholes and all hauled in waste.

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Oxidation ditches

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Results varied wildly and were not reproducible or consistent. With the advice of Abigail Cantor, a consultant

**2014 COPPER RESULTS**

Month	Influent ug/L	Effluent ug/L
January	120.0	41.5
February	120.0	21.0
March	76.0	7.6
April	30.0	4.1
May	46.0	6.2
June	43.0	4.0
July	68.0	5.1
August	98.0	5.4
September	78.0	4.3
October	76.0	4.7
November	48.0	7.2
December	42.0	8.0

January - effluent carboy one month old  
 February - liner in effluent carboy  
 March - liners in both carboys and new effluent tubing  
 April - liners and new tubing in both.

with Process Research Solutions LLC from Madison, we replaced the sample carboys or used liners inside the carboys. The new carboy wasn't the answer as it altered the samples in less than one month of use, so we purchased liners for the carboys. That helped immediately. Then we tried replacing all the sampler

tubing. The problem was solved. We hope to inform others with similar problems so they don't have to retrace these same footsteps. Now we put a new liner in the influent and

effluent carboys on the day of sampling and we replace the entire sampler tubing on both samplers the day before we start sampling for copper. The tubing can continue to be used for one month. The results are fantastic. One would hate to total the man hours and outside lab charges spent in 25 years on chasing this problem.



Carboy with liner

Due to the inflow and infiltration issue coming to the forefront, in 1999

the City started with a trial of cured in place pipe (CIPP). The initial lining of sanitary main segments proved to be a cost effective method for rehabbing degraded pipe without digging. Major repairs still need to be dug. The program has expanded to an annual budget item with every other year projects. By the end of 2016, the City will have lined over 40 miles of pipe or close to 30% of the system. Lining does not cure major defects, but it provides a long term solution to pipe degradation.

Another challenge plaguing operations and maintenance was the flushing of disposable wipes. The City of Beloit developed a campaign of "No Wipes Down the Pipes" and printed a brochure to accompany it. Our staff felt this was the best concept they had seen, so with permission of the City of Beloit, we started the same program in Marshfield. It hasn't been completely accepted by every commercial account, but there is definitely a decrease seen at the lift stations. Education is key to changing public perception because it won't happen by itself. The problem will probably never go away, but something needs to be done until the non-woven industry catches up to the publics' bad habits.

There has been a concerted effort to improve the four lift stations within the city. Our smallest station at Mannville road has had both the pumps rebuilt. Our 8th Street lift is a wet well/dry well style that is being converted to a submersible station. The current wet well backs up into the main and manhole in the street to get enough capacity, so the new station will be dug deeper. At the third lift station on Lincoln Ave. 3400 ft. of force main was replaced, and pumps, transfer switch, and some controls and VFDs were

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Newly installed pumps

*continued from page 16*

added. That has proven to solve the issues there. The most substantial improvements were made to the fourth lift at the North East

Pump Station. About one third of the City's flow comes through this station. The issue here was in part the rags, but in conjunction with the large amount of grease. This was caused by the design of long gravity flow to the remote station and the wet well which allowed the grease to mix with the rags to make a surface mat which you could almost walk on. The revamped station had two of the four pumps replaced, a total upgrade on the electrical service and controls, telemetry upgrade, a switch to fiber



Influent pump station

communications and minor improvements to the wet well side. Each step was an improvement, but the most dramatic was the switch to a computer controlled matrix system for



NEPS control matrix

the operation of the four pumps. This allows each pump to run every day and to have them start and stop at separate wet well levels. By doing this, the wet well is constantly being mixed

*continued on page 18*

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Teledyne Isco announces the Model 5800 refrigerated sampler. This sampler is new with features requested by water quality professionals.

A sampling of these features are:

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- ③ Synchronize your sampling with plant operations using the Pause and Resume program option
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For more information contact:

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Teledyne Isco Manufacturers' Representative  
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 (262) 241-1199



[info@mulcahyshaw.com](mailto:info@mulcahyshaw.com)

*continued from page 17*

and the grease doesn't have a chance to adhere to the rags or build up on the sides.

Another major upgrade has been the holding tank receiving operations. The plant was built with a hauler dump station for holding tanks, septage, porta pottys, and industrial waste. The land around Marshfield is clay soil over granite bedrock. The soil doesn't seep or drain very well. Because of that, the main type of sanitary sewer systems in the country is holding tanks. There are some mounds and conventional sewer systems, but not many. In 2013, there was a stepped



*Hauler dump station*

up approach by the DNR with the septic haulers to discontinue the disposal of raw sewage on these clay soils. They could treat their loads to kill the pathogens and dispose of it on the land, or bring the waste to a treatment plant. In 2012, the year before enforcement started, we received 225 loads of holding tank waste all year. In 2013, it went to 2,852 loads. In 2014, it increased to 6,622 loads of holding tank waste. In 2015, we will receive easily over 7,000 loads. With the increased truck traffic, we added improvements like a second drop station, re-slopping the blacktop so the trucks drain faster and empty out better, more unloading hose options, a water hose to clean up the area, a garbage can for the haulers to empty the rags from the bar screen into, and an updated computer entry pad system. These improvements all helped the drivers, but the great equalizer was the security camera. Every truck or load

is recorded. It creates fairness to all the seven companies that use our facility. Two points to take from this is that every load is cross checked from many angles. The drivers must hand write a ticket showing where each load came from and the size of the tank. The plant operators review the camera recordings each day. The driver manually enters each load into the computer. The office staff cross checks the three above records and invoices the haulers. The haulers check their records before the information is sent to the DNR or the county. In this way the homeowner also has comfort in knowing their holding tank waste was not dumped somewhere illegally.

Wastewater treatment operations and maintenance are constantly improving and evolving for the better. Virtually all Wisconsin cities have a desire to do what is best for the environment. Though many improvements and challenges are yet to come, the City of Marshfield is up to the task. With the passion and dedication of our capable and well-trained operators, our goals for a clean environment will be successful! 🌱



*Staff left to right: Sam Warp Jr. (Superintendent); Jake Charron; Louis Kuhlka; Andy Ott; Joel Goham; Jean Coy (Admin. Secretary); Terry Christensen; Brandon Fischer; Mitch Nosbisch; Mark Kivela (Asst. Superintendent)*

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## Clarifier Deadlines 2016

Issue	Deadline
February	January 15
April	March 18
June	May 13
September	August 12
December	November 11

## City of Kiel hosts Lake Michigan meeting on August 13

Mike Steinhardt, Mayor of the City of Kiel, welcomed the members to the City.

Tom Steinbach with the City of Oconomowoc presented H2S “Pay Me Now or Pay Me Later”. Tom discussed the destruction that H2S can have on a wastewater pumping system. Tom described various H2S problems that he has encountered in Oconomowoc and the means he used to resolve the issues. Tom discussed the differences in financial costs of protecting sanitary systems from H2S with initial installation versus repairing the system after a problem has arisen.



*Chris DeWaal*

Next on the agenda was Chris DeWaal of Mead & Hunt. Chris presented on the arc flash hazards associated with WWTPs. Chris explained what arc flash is and typical causes. Chris described who is responsible for worker safety and what shall be in electrical safety programs. Chris discussed the requirements of an arc flash risk assessment. Chris showed photos

of typical arc flash clothing and briefly described when to wear the various clothing systems. Chris finished his presentation by discussing ways to mitigate arc flash energy within a WWTP.

Jake Becken called the WWOA LMD business meeting to order. Last quarter’s minutes and Treasurer’s report were approved. Richard Sachs of the WDNR stated the revisions to NR 114 took effect, and updated certificates were sent to all wastewater operators. Richard stated that many of the study guides have not been revised and will not be revised in time for the next exam period. Therefore, check the DNR website for available November exams. Richard provided a reminder of CMOM August 1, 2016 deadline, and stated Jack Saltes will be conducting many training sessions across the state from October through December. The dates of these training sessions will be e-mailed to all the operators shortly.

John Maslowski of RKI Instruments presented on gas detectors for wastewater system operators. John described

the progression of gas detectors from the 1930s all the way to the present. John discussed important definitions relating to gas detectors. John provided useful information regarding calibration methods and frequency of gas detectors. John discussed the different styles of gas detectors and explained what styles work well where. John finished his presentation by discussing the effects of different gases on humans at various concentrations.



*Joe Kottwitz*

The last presentation was by Joe Kottwitz of Focus on Energy. Joe’s presentation was titled “Best Practices for Energy Efficient Operation of Wastewater Treatment Systems” and it was a continuation of a presentation that Joe Cantwell presented

*continued on page 20*

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*continued from page 19*

at the February 2015 LMD meeting. Joe provided a Focus on Energy overview, along with a portfolio of programs they offer. Joe discussed the importance of utility bill analysis and benchmarking to track the effectiveness of system improvements. Joe described the best practices for sizing equipment, lighting, VFDs, and dissolved oxygen sensor systems.



*Steve Rabe*

Steve Rabe, Kiel Wastewater Treatment Facility Chief Operator, gave a presentation on the history of plant upgrades, sources of received flow, treatment processes, and plant limits of the wastewater treatment plant. A plant tour followed the presentation.

The next meeting will be in Chilton on December 10, 2015. Special thanks to Kris August and the Kiel WWTP operators for hosting this meeting. 🍷

Minutes submitted by Josh Steffek,  
Lake Michigan District Co-Secretary/Treasurer

## Baldwin hosts West Central meeting August 13

West Central District meeting was held on August 13th at the American Legion in Baldwin. Thank you to Gary Newton for hosting the meeting in Baldwin. The day started with coffee, rolls and business meeting. There were several vendors present at the meeting. Thanking to Travis Walker (Crane Engineering), Larry Wollridge (CTL), Mike Barreau (Dorner Company), Bob Doll (Flygt xylem) and Steve Reed (Electric Pump Inc.) for the booth displays. The District is looking to fill the vice chair and chair seats for next year. The District is also looking for communities to host meetings next year. Months for host meetings are February, May, and August. If your community is will to host please contact Steve Skinner or Rick Weikel. It was a good turnout for the meeting on a beautiful August day.

The first presentation of the day was on the pilot study at the Roberts wastewater treatment facility. Presenters were Steve Berggren with Energenecs and John Bond with The Village of Roberts. John discussed the reason for his new ultra low phosphorus limit of .04 mg/L. He talked about some of the options they tried to remove the phosphorus. They had no success with any available chemical removal options to achieve the ultra low limit. In order to reach .04 mg/L limit a major plant upgrade would be required. John was contacted by TriSep about running a pilot program with a PVDF membrane filtration system. This is an ultra-filtration system. Steve spoke about the pilot program and how the water moves through the filtration system. Benefits of this type of system include being able reach ultra-low limits, high levels of disinfection, and pathogen and bacteria capture. The system has a built in filter that back washes when the water flow psi gets too high. The pilot proved to be successful by achieving levels at or below .04 mg/L. John discussed the running of the pilot program. John said the filtration unit needed to be housed inside a building do to testing being done over the winter. John showed pictures of the unit and explained how the unit worked, including how the unit was fed and monitored for day to day operation. For testing purposes, the unit was sized to treat about 5,000 gallons per day. John displayed water data results prior to and after treatment. There were 62 samples analyzed over the test period. One of 62 samples had a result of 0.07 mg/L phosphorus. Four of 62 samples tested at 0.06 mg/L phosphorus. Fifty seven of 62 samples results were 0.04 mg/L. Forty five of 62 samples results were 0.03mg/L of phosphorus or non-detectable. They ran a fecal test on the treated water and found no cultures present.

*continued on page 21*



*continued from page 20*

The filters were also disinfecting the water. Steve finished the presentation with an overview of system operation and maintenance costs for the unit.

Troy Heimerl with JCW presented on the handy wipe crisis in collection system. Troy started with pictures of the all too familiar rag balls from lift stations. He talked the type of materials being found in the rag balls. It was surprising to hear that 50% of households today using baby wipes don't even have children in them. So the billion dollar question is how do we combat these wipes? The answers are simple, but the solutions are not. Possible fixes to the problem include educating the public and upgrading the collection system to handle the problem. In order for second option to work it requires pump impeller upgrades to a vortex or screw type impeller. What does the impeller upgrades accomplish? They help prevent pump damage, plugging problems but not wipe reweaving after being pumped. JWC makes pumps with a seven, thirteen, and a seventeen tooth cutter configuration. The seventeen tooth cutters were made for the wiper issue in the collection system. These type of pumps shred materials finer. This reduces wipe and paper material reweaving. This still allows for removal of debris by plant fine screens. JWC offers pre-fabricated manhole for location installation where a problem facility has been identified. Once the material has been pumped through the collection system, screening at the head works of a treatment facility is needed to capture material to prevent carry over into the plant. Wipes aren't going away but the pumping industry has been working to try and stay ahead of the problem with new pump designs to keep the wipes moving.

Paul Gont and Luke Peterson with S.E.H. wrapped up the morning sessions with a presentation on 3-D CAD drawing and the benefits with it. Luke Peterson has been with S.E.H 15 years and is the senior technical designer. He discussed the progression of CAD drawings. How they started with hand drawings then progressed to computer aided design 2-D drawings, and now to 3-D drafting and design. Luke briefly talked about the earlier versions but focused on 3-D CAD advancements. New advancements in CAD technology are helping in analysis of structural, mechanical, electrical and plumbing cost for projects. The information gather at job sites helps in putting together documentation for projects. Luke gave several examples of the same project looking at it through different views from the 3-D CAD view. One of the neat features of the program is a walkthrough view of a proposed project. It allows clients to visualize a finished project. He took a finished

example and demonstrated how changes could be made to door openings, windows, and any other aspect of a project. Luke described how a CAD drawing was produced with the use of laser scanning. The laser scans an area off set points to generate a 3-D model. This has proved to be very useful in hard and hazards location that limit access to a particular area. There are limits to what the laser can do. If plotting an area and there is an abstraction in the way of the laser view, those areas will appear as shaded areas. It may require moving the laser a few times to complete a full view scan. When completed the results are great with a more complete aspect of what a finished project is going to look like.

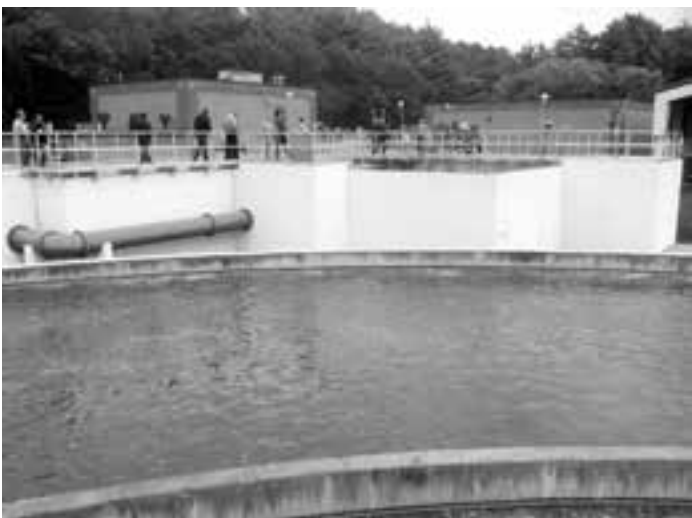
Afternoon sessions started off with David Voss with Focus on Energy on a discussion on Energy Operation in WWTP. As most of you know Focus on Energy is a state wide program assisting residents, business and municipalities with energy efficiency and renewable energy projects. The program on average saves \$2.46 for every dollar spent on a project. Their program covers a wide range of residents and business energy needs. The help they provide is more technical by reviewing projects and advising whether upgrades for a project are the best choose.

From there after approval of the reviewed project, people can apply for incentive money to help offset the cost of implementing the proposed work. David talked about best energy practices to help reduce ones energy bills. He discussed the billing terminology on the monthly bills to help people decipher what the charges are for. Focus on Energy will help a facility see how their energy consumption compares to other facilities comparable to themselves. He discussed what some of the benefits and cost saving would be by adding the right type of energy efficient equipment. David finished with examples of projects that demonstrated the cost saving with installing the proper equipment for a project.

The day finished with DNR representative Pete Skorseth with DNR updates. He said to be working on those CMOMs. He stressed on how important is to get working on a program lay out. Go to the DNR website for assistants on getting started and help for getting a program together. The renewal permits will state in it if a CMOM is required for a facility. It is best not to have to scramble at the last minute to get one together because it is dictated to have one. He gave an overview on what is going on with phosphorus limits and what options there are for keeping ones facility in compliance.

After the updates the day was wrapped up with a tour of the Baldwin WWTP facility. ●

## City of WI Dells and Village of Lake Delton WWTF plant tour



### Meet & Greet



## Sporting Clays 2015 at Woods and Meadow, Warrens



*Bucky Walters Top Gun,  
shot a score of 44*



*Rob Brillhart. Found a \$50  
bill in his chosen door prize*



*2nd Place Team, shot a score of 108  
L- R Ted Winkleman, Jeff Hoeper, Rob Brillhart, Jeff Simpson*



*1st Place Team, shot a score of 124  
L-R Jim Riege, Jim Larsen, Tom Stubbins, Bucky Walters*



*3rd Place Team, shot a score of 105  
L - R Bill Rahling, Brad Retzlaff, Rob Carlson, Wes Klatt*

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**Crane Engineering**  
**William/Reid**

### 2015 WWOA Service Award

*LaMont Albers – Pete Albers*



## 2015 Operators of the Year Award

### Lake Michigan Region



*Dustin Jerabek – Kevin Nett*

### North Central Region



*L to R: Terry Vanden Heuvel, NCR 2015 Operator of the Year, Andy Ott, NCR Chairman*

### Northwest Region



*Barry Bassett – Larry Reinke*

### West Central Region



*Gary Newton – Dan Manier*

## 2015 Operators of the Year Award

Southeast Region



*Bob Biedreyski – Tim Nennig*

Southern Region



*Nate Tillis – Bucky Walters*

## Newcomer of the Year



*Sharon Thieszen – Dana LaPage*

## Region of the Year



*Jeff Simpson – Barry Basset*

## Lifetime Members 2015



*L to R: Rob Nelson, Robert Anderson, Kim Wollner, Jim Strehlow, Stephan Byrne, Jim Miller*

## Past Lifetime Members



*Front Row: Tom Mulcahy, Jeff Bratz, Kevin Freber, Tim Nenning*

*Row 2: Roy Lembcke, Paul Lange, Jim Johnson, Dale Neis, Leo Templeton, Dan Busch, Jim Strehlow, Jim Thalke, Rich Boden*

*Row 3: ?? Ken Johnson, Don Lintner, Pete Albers, LaMont Albers, Ken Sedmak, Randy Herwig, Jim Miller, Dean Falkner, Randy Thater*

## Past Bernauer



*Ken Johnson, Pete Albers, LaMont Albers, Leo Templeton, Dan Busch, Dean Falkner, Dan Brady*

## 2015-2016 Board of Directors



*Kris August, Jeff Simpson, Sharon Thieszen, Jim Johnson, Kelly Zimmer, Lyle Lutz, Jeff Bratz, Jeff Smudde, Don Lintner*

## All Kolby Crabtree Recipients



*Back row: Roy Lemkcke, Paul Lange, Rick Mealy, Mike Raynovic, Ked Sedman  
Front: Torrell Geffers, Dan Busch*

## 2015 Bernauer Award



*Dan Brady*

## Scholarship Recipients 2015



*Mike Raynovic – Alex Smudde*



*Don Lintner – Anthony Dose*



*Don Lintner – Wayne Castle*

## Kolby Crabtree 2015

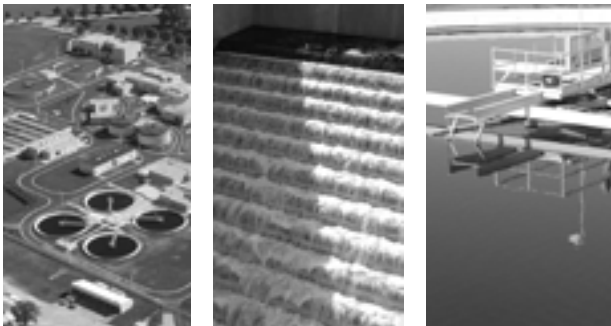


*Richard Mealy – Torell Geffers*

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## Call for technical papers 2016

The WWOA Technical Program Committee is requesting your assistance in developing the Technical Program for our 50th Annual Conference to be held Oct. 11-14, 2016 at the LaCrosse Center/Radisson Hotel, LaCrosse, WI.

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. To the right are major subject areas that presentations may cover. Papers dealing with other topics will definitely receive consideration by the committee.

Submit your outline(s) on the 2016 Conference Submittal Form (via e-mail - preferred or mail) by January 15, 2016 to: Jeff Bratz, Western Racine County Sewerage District, 1020 N River Road, PO Box 177, Rochester WI 53167-0177. Phone: 262-534-6237. Email: wrcds@tds.net

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

*continued on page 31*



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*continued from page 30*

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Sincerely,

Jeff Bratz 2016 Technical Program Committee Chair

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7. WI NR Codes: Change and Affect
8. Industrial Waste
9. Maintenance Practices & Methods
10. Safety & Health Issues, Personnel & Process
11. Regulations, Watershed Issues
12. Laboratory Practices & QA/QC with Analysis
13. Excel and Word: Make Recordkeeping Easier
14. Treatment Facility Performance
15. Receiving Water Quality Issues
16. Collection System I&I/CMOM:  
How to Implement the Program  
Private Lateral Repair

## **50th Annual WWOA Conference Conference Submittal Form Oct. 11-14, 2016 LaCrosse Center/Radisson Hotel**

Technical Presentation Subject \_\_\_\_\_

Author(s) / Presenter(s) \_\_\_\_\_

Employer / Affiliation \_\_\_\_\_

Address \_\_\_\_\_

Email Address \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

Author is actively involved in the day-to-day operation of a WWTP? Yes \_\_\_\_\_ No \_\_\_\_\_

Author is an active member of WWOA? Yes \_\_\_\_\_ No \_\_\_\_\_

Brief Description of Presentation (please type or print clearly; attach additional pages if necessary):

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Submit your outline(s) on the 2016 Conference Submittal Form (via e-mail - preferred, or mail) by Jan. 15, 2016 to:

Sharon Thieszen  
Sheboygan Regional Wastewater Treatment  
3333 Lakeshore Drive  
Sheboygan, WI 53081

Phone: 262-534-6237  
Email: wrcds@tds.net  
(Word file for e-submission at wwoa.org)

## Motley Poo wins the 2015 Operators Competition!

Held at the Kalahari Resort on October 7th, this year's Operators Competition was bigger than ever. With six teams competing it was bound to be a very tight competition. The six teams worked through four tough events prepared for them. The Operators Competition challenged the six teams in the Collection Event, Maintenance Event, Lab Event and Operations Event. The Collections Event had the teams fixing a section of 8" PVC pipe with another piece of 8" PVC pipe with a saddle. Each section of pipe had to be cut and made by the teams. At the same time they had to set up a flow meter in a flume to send a signal to the sampler to sample at a given rate. The maintenance event was replacing a seal in a submersible pump. Teams had to lift the pump with a crane, set it in the work area, disassemble the pump, replace the wear parts, reassemble it and reinstall the pump into its original location. This proved again, to be a great event, challenging the team's mechanical knowledge and skills. The plant operations event tested the team's knowledge of plant operations and problems that are encountered in treatment facilities. The lab event, teams were asked to set up BOD samples for testing using the proper techniques and seeding

where required. This event included a written test and calculating BOD results.

Motley Poo from the Lake Michigan Region took the victory in this very tight competition. Dustin Jerabek from Heart of the Valley, Jake Kehring and Bryan Thompson from New Water combined skills for the victory. They were followed by We Like to Potty from the LMR; Andy Vickman – Wrightstown, Corbin Magnin and Jake Bobby Zepnich – New Water. Third place was taken by the NCR Turdles; Jason Schill – Merrill, Ryan Geifer and Adam Clark – Stevens Point. They were followed closely by three other prepared teams; The NCR Sewer Rats Joel Goham, Jake Charron and Mitch Nobisch from Marshfield, The SER Grinders Tom Dixon – Norway, Mike Kelley and James Malone from Cedarburg and The UW Stevens Point Pointers Alex Sudde, John Zeker Both seniors and Jake Tanner a junior.

We are beholden to our volunteers who acted as Judges for all of the events. I would like to acknowledge and thank Matt Schmidt, Mark Duer, Jacob Becken, Dan Waala, Holly Blazer, Jeff Smudde, Aaron Eichhorst, Shawn Chong, Glen Claus and Jim Miller for their hard work and time making this another excellent event. Thank you to all the sponsors of the event with supplies and equipment; NCL of Wisconsin, Grundfos, RDM Municipal Supply, HD Waterworks, JF Ahern, Mulcahy Shaw Water, Ferguson Waterworks and Central States Water Environment Association.

CONGRATULATIONS to all the participants, well done! 🎉  
Jeff Bratz, Chair Operators Competition



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| Durable Controls Inc.                    | Northern Lake Service                   | WDNR Environmental Loans/         |
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| Electric Pump Inc.                       | Pace Analytical                         | William Reid LTD                  |
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| Enviro-Care Company                      | Peterson and Matz, Inc.                 | Xylem-Flygt                       |
| Environmental Health Product and Service | Portaco                                 | Xylem-Sanitaire                   |
| Envirotech Equipment Co.                 | Process Equipment Repair Services, Inc. | Xylem-YSI                         |
| Envirotech Gates                         | Pumping Solutions                       | Zorn Compressor & Equipment       |
| Eurofins/S-F Analytical Lab              |   |                                   |
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## 2015 WWOA conference at a glance, Kalahari Resort



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## Mt. Horeb Utilities hosts Southern meeting on August 25



*Nate Tillis (right) recognized John Klein (left) for hosting the meeting.*

With the city administrator having to cancel his introduction on short notice and everyone enjoying refreshments thanks to Strand Associates Inc.; John Klein, the manager of Mt. Horeb utilities stepped up to deliver a

welcoming to the 62 attendees at Deer Valley Lodge.

Jim Kleinschmidt of Baxter & Woodman opened up the day of presentations discussing issues and concerns of phosphorus and the Sugar River. The Sugar River watershed



*Excellent attendance increased by the presence of 15 Wisconsin DNR staff.*

is fed by the effluent of eleven treatment plants which are constantly adding phosphorus to the watershed. This creates problems with non-compliance to strict phosphorus regulations for the regions and becoming compliant can cause headaches. There are seven strategies for compliance which are: accept the limit-construct facilities, eliminate discharge, adaptive management, trading, multi-discharger variance, individual variance, and site specific criteria. Each of these have advantages or disadvantages and may work better in certain areas but the end goal is the same; to reduce phosphorus and achieve compliance throughout the Sugar River watershed.

Next on the agenda was a presentation by Josh Voight of Flygt-Xylem concerning retro fitting at pump stations. Retro fitting is done when a model becomes obsolete or discontinued, flow is added, or when repairs become too



*Josh Voight presents an informative and entertaining presentation of retrofitting pump stations*

expensive to justify a fix over a new pump. When considering a pump retro fit as an option there are circumstances to consider such as conduit size, well size GPM, etc. Another important aspect is the previous pump bracing and performance information of the new pump. The brackets of the old pump will tend to stay in place so the new pump brace will need to be heavily modified or created to allow for the retro fit. There are many ways of achieving this and also upgrading the pump station during a retro fit.

Strand Associates Inc. provided refreshments for a short break Greg Droessler of Town & Country Engineering spoke on the topic of biological phosphorus removal technology. Greg started off discussing the various forms we see phosphorus in and the TMDLs that we need to comply by. He mentioned chemical phosphorus removal and quickly summarized how it's done, and the advantages and disadvantages of running it. He then began speaking of the primary topic which is biological removal of phosphorus. Biological phosphorus removal (BPR) is creating an environment of phosphorus accumulating organisms which are then removed and processed as sludge or returned to aid in creating the proper environment. It has low operation costs and improved performance but has high capital costs, is complicated compared to chemical treatment and can be temperamental. Greg discussed the type of organisms needed and briefly summarized the treatment process before proceeding into a series of case studies.

Kara Hible of PVS Chemical was up next with a presentation on the best management practices for the safety and addition of ferric chloride. Kara started out by explaining the multiple uses for ferric chloride and what factors are important in quality ferric and phosphorus removal such as

*continued on page 37*

*continued from page 36*

pH and coagulant properties. After a safety video concerning handling of ferric; Kara went more in depth into storage, handling, and unloading of ferric at the plant. She also covered accidental release procedures and firefighting of ferric related fires.

Leading into lunch was the business meeting and the W-DNR update. Nate Tillis, chair of the southern district, made a note to the southern district looking for secretary nominations for next year. If you are interested please contact any of the officers for the southern district. John Klein was presented with an award acknowledging Mt. Horeb Utilities for hosting the meeting. A few more announcements were made such as the annual conference at the Kalahari which runs from Oct. 6-9, and that the southern district is looking for host facilities for the years to come. The meeting was adjourned and Amy Garbe had a quick DNR update mainly mentioning a reminder on CMOMs and that the November operator exams will be limited due to updating the study guides.

The final two talks were by Randy Langer of Strand Associates Inc. He worked on the most recent additions to Mt. Horeb Utilities and spoke about preliminary treatment and the upgrades made to Mt. Horeb. Preliminary treatment is important because without it there can be major



*Randy Langer presents the past, present and future of the Mount Horeb Wastewater Treatment Facility.*

problems due to accumulation such as ropes or balls of trash, clogged pumps and piping, and excess wear. Randy spoke in depth about screening and grit removal and then transitioned into Mt. Horeb's upgrades. The original plant was built in 1978 and had its first additions in 1989 which had an extensive list of upgrades. 1996 saw upgrades driven by stricter phosphorus limits and then in 2014 Mt. Horeb had extensive preliminary treatment upgrades. He briefly mentioned the new plant which will be built across the road; aside from initial plans in 2009, the official development process began this year. This was the final presentation and led into a tour of Mt. Horeb Utilities. 🌐

Prepared by: Jon Karch



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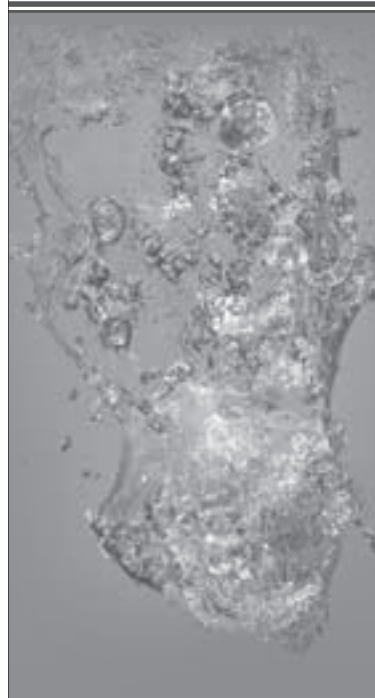
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# IN CONTROL Successful operations through process control Want an effective CMOM program? Top ten "Be sure to do"

By Jack Saltes Wastewater Operations Engineer Wisconsin Department of Natural Resources



I have been asked from time to time on my opinion of the top ten-be-sure-to-do for an effective, successful CMOM program. From what I see and observe, experiences you and consultants have all shared with me, in case study presentations and what I have read nationally here's my list. (Of course, subject to change!) Ask your consultant what his list would be. Write down yourself what it should be. Ask a fellow operator. Here's mine:

## 1. TELEVISION 10% of YOUR SEWER SYSTEM EACH YEAR

The only way to 'see' a sewer pipe is with a camera. Sewer televising only during street projects is a practice of the past

in the new CMOM era. You need to assess the baseline condition of your entire sewer system on a ten year rotation (good goal) if it can be afforded. If not, then 5% per year.

## 2. GIS MAPPING

Having your entire sewer system GIS mapped with several informational layers and that information readily available is critical to managing it. If you are still using paper maps, it's time to add this as a CMOM goal, even if you just GIS map 10% a year, coupled with your 10% a year televising.

## 3. SEWER USE ORDINANCE & CHARGES

Your sewer use ordinance is THE legal authority to do what you need to do (and charge) to manage, operate and maintain your system. The ordinance should be reviewed every two years and revised as needed, for both the collection system and the treatment plant.

*continued on page 40*

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**4. SEPARATE BUDGET FOR THE COLLECTION SYSTEM ONLY**

Having a separate budget account and line items for just your collection system can allow a utility to budget more accurately by collecting and spending monies from an account that is for only the sewer system. What goes in it should come out of it for just collection system O&M expenses and capital projects. The treatment plant has its own account for its use.

**5. FATS, OIL AND GREASE (FOG) CONTROL PROGRAM**

Grease build-up is one of the biggest causes of blockages in sewer pipes and maintenance migraine for lift stations not to mention what happens when it gets to the plant. Develop a strong Grease Control Program, carry it out and enforce it. Information & education is part of such a program for businesses and residents.

**6. PRIVATE LATERALS AND BUILDING INFLOW SOURCES**

40-60 % of the pipe in the ground in a community is private pipe. It cannot be ignored if one is to have a

successful CMOM and I/I reduction program. Private lateral inspection, televising, repair, rehabilitation and especially funding are vital for managing the collection system as a whole. The old adage hold true, “where there is a will, there is a way”. Many communities are now finding a way.

**7. PRIVATE LATERAL CONNECTION INSPECTIONS**

The connection point of the private building lateral to the sewer main can be a large source of I/I through improper installation. Every new connection or repaired connections should be inspected and photographed before is backfilled. Once filled, you will never see it again, unless you took the picture and have a record of its proper installation.

**8 EMERGENCY RESPONSE PLAN, ESP. BASEMENT BACKUPS**

No one wants sewage, however small a volume or dilute, in their basement. Your primary motivator.....empathy! .... for your neighbors, friends, or fellow residents. Prompt emergency response and procedures should be documented in your CMOM Emergency Response Plan with information, guidance and contact information for the building owner. Detailed record-keeping for each and every building back-up and its cause is a must.

continued on page 42

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*continued from page 40*

**9. INFORMATION & EDUCATION (I&E) PROGRAM**

Plain and simple, every highly effective CMOM program I have read or heard about have excellent outreach and I&E consisting of bill stuffers, door hangers, informational mailings, an informational website, newspaper articles, and informational meetings, etc. These are all opportunities to bring your utility, the work you do in your collection system “in sight, in mind” by letting them know their local tax dollars are being well spent by you.

**10. ANNUAL CMOM PROGRAM AUDIT AND CMAR**

Your CMOM was never intended to be another paper exercise. It isn't to be a paper weight or to gather dust. For CMOM success, real committed success, to reducing SSOs and basement backups and breakdowns and crisis management, it needs to be reviewed and revised as needed every year especially the GOALS. Did you meet them last year? What are your revised or new goals for the next year? What are your changed or new priorities and budgeted tasks/projects based on that ongoing sewer televising you have been doing?

As part of your CMAR every year, view every one of the collection system section performance indicator graphs. Print them and put them in year CMOM every year, right up front in the Annual Audit section of your CMOM. These are a great tool for tracking performance. Are they zero or

trends decreasing? An effective CMOM program will show decreasing trends. Hats off to your ongoing work well done! See you all at one of the twelve CMOM Training sessions across the state this winter. (See page 44 for the training schedule.) I look forward to seeing you and hearing you pipe up about your collection system. Happy Holidays!

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## Operators, are you CMOM ready?

### Lift-off is fast approaching (August 1, 2016)!

The DNR will be conducting CMOM Training at 12 locations throughout WI. All sessions will run from 10am until 12pm with an hour lunch break on your own and then continue again at 1pm until 3pm. The training will go through each CMOM component in detail using the Wisconsin CMOM Booklet as the template for developing your program (CMOM Booklet link).

#### CMOM Training sessions will be at the following locations and days:

Eau Claire DNR Office	December 3rd, 2015	1300 West Clairemont, room 158 and 185
Plover at WRWA	December 4rd, 2015	350 Water Way, Technology Center
Green Bay at NWTC	December 11th, 2015	2740 W Mason Street, room BI 326
Milwaukee DNR Office	December 18th, 2015	2300 N Dr. Martin Luther King, Jr Drive, room 141
Fond du Lac at MPTC	January 6th, 2016	235 N National Avenue, room O-103 and O-104
Fennimore-SW Tech College	January 13th, 2016	1800 Bronson Blvd, Lenz Center, room 365
La Crosse DNR Office	January 21st, 2016	3550 Mormon Coulee Rd, LAX Serv Cent, room B-19 & B-20
Johnson Creek Comm. Center	January 27th, 2016	417 Union Street
Madison	February 3rd, 2016	Location to be determined
Ashland	February 10th, 2016	Location to be determined
Rhineland DNR Office	February 17th, 2016	107 Sutliff Avenue, room 1
Marinette at NWTC	February 24th, 2016	1601 University Drive, room 108

Space will be limited, please RSVP to Danielle Luke at [danielle.luke@wisconsin.gov](mailto:danielle.luke@wisconsin.gov) as soon as possible with your facility name and the names and Wastewater Operator Certification number of the people who are planning to attend. A CMOM booklet will be provided for each facility.

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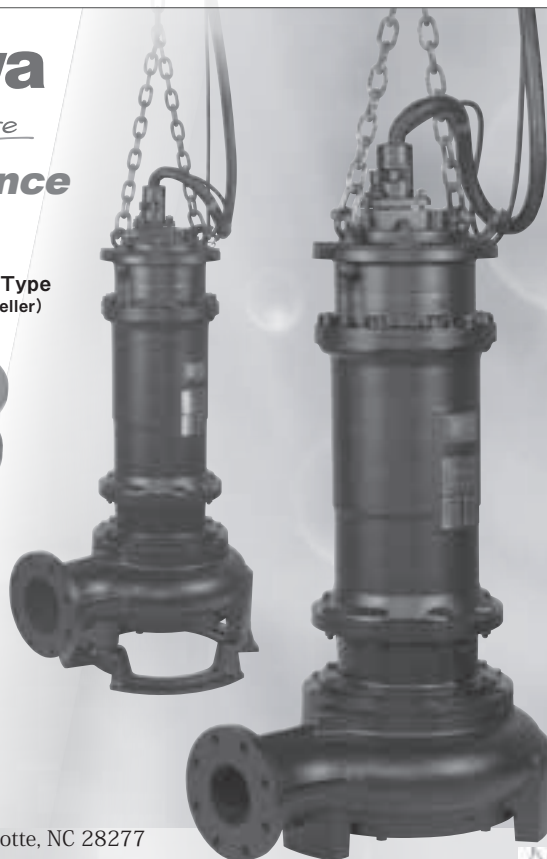
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manufacturing, pulp and paper, oil and gas, and iron ore mining. In his new role, Jim will serve clients throughout Wisconsin. We are pleased to welcome him to our team.

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## Attention All WWOA Members

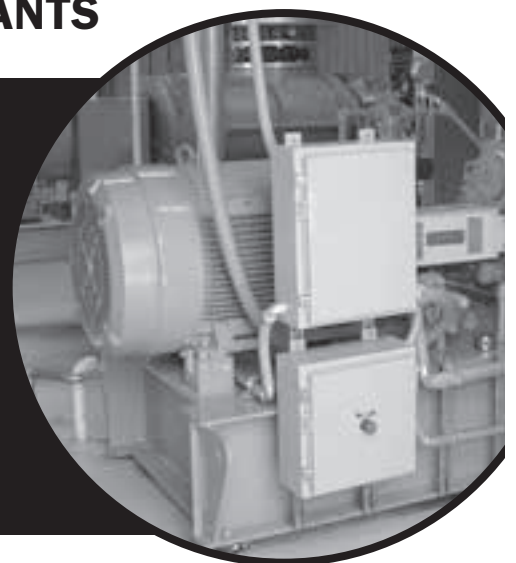
The next Southern district meeting will be February 10 in Beaver Dam.

The unofficial title for the meeting is "Cheese to Power". The meeting will be held at the Old Hickory golf course with a tour to follow."

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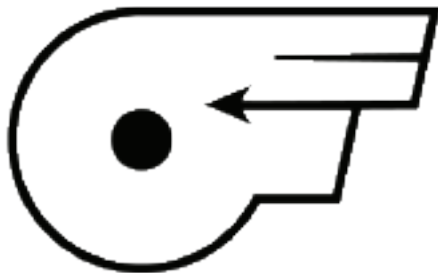


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