Spencer Wastewater Treatment Plant, Spencer, Wisconsin

53rd Annual W.W.O.A. Conference
October 8-10, 2019
KI Convention Center, Green Bay
Inside This Issue...

- Presidents message / Page 3
- Village of Spencer Wastewater Treatment Plant / Page 4
- Troubleshooting corner: Floc formation / Page 12
- Denmark hosts December Lake Michigan district meeting / Page 14
- 53rd annual conference information / Page 18
- Upcoming events / Page 20 and 21
- 32nd annual Classic Collection System Seminar / Page 22

The Clarifier is the publication of the Wisconsin Wastewater Operators’ Association and is intended to inform and educate the membership on issues related to the treatment and control of wastewater. The Clarifier is produced five (5) times each year: February, April, June, September, and December. All members are encouraged to contribute to the mission of the Clarifier.

The Wisconsin Wastewater Operators’ Association is a non-profit organization dedicated to educating, informing, and advancing the wastewater profession. WWOA has approximately 2,000 members divided throughout six regions: Southeast, Southern, Lake Michigan, North Central, Northwest, and West Central.
**Presidents message: Ecology/pollution/environment/recycling/sustainability...We have come a long way**

Timeline: Somewhere around 1968, a young boy and his family are driving down an interstate. They had just finished eating their drive-through lunch. Dad rolls down the window and throws multiple bags of food waste out of the window. The boy watches the trash litter the highway and says, “Hey Dad! Why did you do that?” Dad says, “That’s what we always do.”

This affects the boy and a couple years later he joins the Ecology Club at school to help clean up these type of messes and help people be more aware of our resources and the value of protecting them.

Timeline: Around the early 1980s. The young man is working a construction job and digging a new process line with a backhoe for a chemical plant. While digging, he uncovers a bunch of barrels with skull and crossbones branded on them. He immediately calls the supervisor for the chemical plant and asks him to visit and advise. The supervisor says to cover the barrels back up and move to a different area!

We sure have come a long way in protecting our environment and resources, as these two events would be met with legal repercussions today.

In case you have not guessed yet, that young boy/man in the stories was me. I am still very passionate about protecting our resources, as I am sure you all are too.

Today, we speak of the environment, recycling and sustainability. These encompass water, land and air protection and ideas about how we can use the byproducts of the treatment processes we use to clean them. Let us keep up the good work.

Finally, it is not too early to make plans for our 53rd annual Wastewater Conference in Green Bay at the newly renovated KI Center/Hyatt Regency Conference Center.

You can get all of the information online at www.wwoa.org, including registration, hotels and vendor booths.

As always, the conference will feature golf, sporting clay shoot and a bike ride Tuesday morning with pre-conferences on Tuesday afternoon. Tuesday night is the always famous, “Meet and Greet”.

Wednesday and Thursday will have Tech Sessions and vendor displays. Thursday afternoon will be the business meeting, tech sessions, plant tours followed by the social hour and awards dinner Thursday night.

Friday will conclude the conference with the farewell breakfast. I hope to see you all there.

Please remember to share your ideas as we strive to improve and educate.

Sincerely, Jeff “Juice” Simpson

---

The Clarifier Deadlines

<table>
<thead>
<tr>
<th>Issue</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>March 15</td>
</tr>
<tr>
<td>June</td>
<td>May 10</td>
</tr>
<tr>
<td>September</td>
<td>August 2</td>
</tr>
<tr>
<td>December</td>
<td>November 8</td>
</tr>
</tbody>
</table>
The Village of Spencer owns and operates an extended aeration activated sludge wastewater treatment plant with an Orbal oxidation ditch, aerobic bio-solids digestion, chemical phosphorus removal, and ultra-violet disinfection. This third iteration of wastewater treatment in Spencer was built in 1989 and almost completely replaced the second generation mechanical plant from 1973. Back when the plant was being designed, Marathon County, like many others in Wisconsin, was projecting high population growth estimates, and the plant was built with this in mind. Almost 30 years later the system is finally edging over 50% capacity. Because the plant is in such great physical shape this put us in a great position for the future, but there were a few items that needed to be addressed.

The Challenge
In 2017 we hired McMahon Associates to address three major limitations of the system, (1) bio-solids storage, (2) bio-solids treatment, and (3) raw influent screening. Although our plant was well balanced when it was built in 1989, changes in DNR regulations, local cropping and weather patterns, and the introduction of non-woven sanitary products have created challenges our system was never designed to meet.

When the DNR added a new phosphorus limit in 2000, we added a chemical phosphorus removal process which caused a significant increase in solids production. Because the plant was operating at less than 50% capacity there were adequate storage and treatment options at the time, but that changed starting in 2013 when the DNR began stricter enforcement of land applications of holding tank and septic tank waste. Incentivized to use treatment plants over farm fields, waste haulers chose Spencer as one of their local options and hauled-in-waste jumped from 1.5 million gallons per year to 15 million gallons per year. A number of process control changes like increasing MLSS concentrations and detention times, minimizing chemical solids production, and maximizing thickening operations, carried us for a number of years while we evaluated the situation.

Adding to our bio-solids storage and treatment concerns was the fact that Spencer applies Class B bio-solids as a liquid, mostly as surface applications to local hay fields. Because wet field conditions typically prevent early spring applications, the DNR's required 6 months of storage space was insufficient, and we found ourselves busting at...
USABlueBook is the only 18-year Diamond Sponsor of the National Rural Water Association.

USABlueBook® is THE SOURCE for On-Line Analytical Equipment.

Automate your process and free up your time.

Shrinking staffs and regulatory pressures make it tough to run a plant these days, but automating your system can take some of the burden off your team. We stock process analyzers, accessories and reagents from Hach, Endress+Hauser and other trusted brands. Plus, our Technical Support reps can help you put together the right system for your specific needs. Check out our complete selection of process analyzers on pages 1186-1249 of Master Catalog 129 or at www.usabluebook.com.

Request your FREE catalog today!
800-548-1234 • www.usabluebook.com

Get the Best Treatment®
the seams. In 2015 and 2016 we were forced to limit the amount of hauled-in-waste we received. Complaints by local haulers, in addition to the lost revenue, convinced us that the time had come to address the issue.

The Solution
After evaluating a number of potential options, Spencer decided to stay with a class B liquid bio-solids solution. This choice was made primarily due to the availability of usable land within a short distance of Spencer, and the lower associated hauling and application costs. Liquid surface applications are relatively inexpensive, and the same haulers that bring in the holding and septic tank waste are able to apply our bio-solids with no additional specialized equipment needed. We opted to install a new 800,000 gallon Aquastore glass lined steel storage tank as a more economical option as opposed to concrete. Stainless wasn’t a good fit for us because of the chemical incompatibility of the ferric chloride used in the phosphorus removal process.

Unlike the old storage tanks that were aerated, the new storage tank is mixed mechanically only when necessary using Evouqa Jet Mix pumps, saving on electrical costs.

The new tank was sized to meet the design capacity of the plant, including the chemical solids created by phosphorus removal, with 9 months of storage to get us through wet springs.

Because surface applications require addressing the DNR’s “vector attraction” limitation, special attention must be given to the bio-solids stabilization process. We’ve always used aerobic digestion to stabilize our bio-solids. Even with the recent increase in loadings, anaerobic digestion wasn’t a cost effective solution. The increased loadings were stressing the existing aerobic digester, and we were starting to see increases in the SOUR test results used to demonstrate compliance with the vector attraction requirement.

The existing bio-solids storage tanks were already setup to be aerated and included the necessary liquid plumbing lines, pumps and blowers. We were able to repurpose these tanks as additional aerobic digesters, tripling our treatment capacity without adding to our limited footprint. In order to retain the heat necessary for treatment in cold weather, the tank’s simple fabric Cover-All enclosure was replaced with an insulated brick building.
WHAT’S INSIDE MATTERS

DON’T SETTLE FOR LESS THAN THE BEST

SPECIFY VITRIUM™ PREMIUM TiO₂ TECHNOLOGY

The interior of ALL Aquastore® tanks feature proprietary Vitrium™ coating technology enhanced with titanium dioxide for the toughest glass available.

GET THE QUALITY YOU DESERVE

• Tough TiO₂ glass formulation provides longer life
• White interior is easier to inspect than darker coatings
• Electrostatically applied base coat application ensures consistent quality
• Factory certified "holiday-free" sheets
• Designed for use in both cold and hot climates
• Designed, fabricated, shipped and supported within the USA

©2016. Cady Aquastore, Inc. and Great Plains Structures. Aquastore is a registered trademark and Vitrium is a trademark of CST Industries, Inc.
The final major modification to the system was the improvement and relocation of the hauled-in-waste receiving station. With 20 plus loads a day coming into the plant, haulers were often times backed up 4 or 5 trucks deep on the road in front of the plant. This caused traffic safety concerns. A new gravity sanitary sewer line was added in front of the plant as part of an associated street project which allowed the receiving station to be relocated to the north side of the plant. This allows for waiting trucks to be staged off the road. A flow meter and sampling station were added along with a containment pad. The new system includes a 6 inch discharge connection allowing for much faster unloading times.

The screening equipment in the headworks building was under a great deal of stress due to the increase of hauled-in-waste and the uptick in non-woven fabrics plaguing most wastewater systems. We were experiencing plugged pumps and probe fouling problems on an increasing basis. In order accommodate these screenings, and increase the haulers discharge to 6 inches, a new Enviro-Care rotating drum screen was installed to replace the under sized basket screen.

All three major pieces of equipment, the Aquastore tank, the Evoqua Jet-Mixing system, and the Enviro-Care screen are represented by Rob Szekeress of Peterson and Matz. The construction project was led by Dustin Rudie of Staab Construction and our engineer on the project was Chad Olsen of McMahon Associates. The $3 million project was funded through the Wisconsin Clean Water Fund and included a portion of principal forgiveness and a reduced interest rate for the hauled waste improvements. The increase in hauled-in-waste covers a significant amount of the costs and no rate increases were necessary.

The Future
In addition to the recent modifications, we’ve taken steps in two other key areas to meet the needs of our system, phosphorus and staffing.

continued from page 6

PROCESS EQUIPMENT REPAIR SERVICES – Our name says it all.

Our team provides equipment repair and rebuild services to the water and wastewater treatment industry. With over 30 years of experience, our staff has installed, rebuilt and/or repaired the following equipment:

- Mechanical Bar Screens
- Conveyors
- Grit Removal Systems
- Clarifiers
- Aeration Equipment
- Trickling Filters
- Digesters
- Flocculators
- Sand Filters
- Screw Pumps
- Airlift Pumps
- Trash Rakes
- Traveling Water Screens
- Floatation Thickeners

We offer professional guaranteed service. We will provide a quotation including equipment requirements and a firm price for the project.

Our customized services allow you the option of having our trained staff work with your personnel or we will provide total turnkey service to complete your equipment installation, repair, or rebuild needs on a timely, competitively priced basis.

Contact Process Equipment Repair Services today, for all your equipment needs!

Phone 262-629-1059 • Cell 414-412-4403 • Fax 262-629-1059
Email PERSLaMont@aol.com
5991 Division Rd. • West Bend, WI 53095
Huber S-DISC
Sludge Thickening Solution

MINIMUM NOISE & CONTROL REQUIREMENTS

COMPACT DESIGN REQUIRING NO LUBRICATION

KEEPS ELECTRICAL, WATER & CHEMICAL COSTS LOW

SLUDGE VOLUME REDUCTION UP TO 90%

FULLY AUTOMATIC MESH CLEANING

THIN SLUDGE INLET/THICK SLUDGE DISCHARGE

SOLD & SERVICED LOCALLY BY

Energenecs
WWW.ENERGENECS.COM
800-343-6337
Like most other communities in Wisconsin, Spencer is concerned about new lower phosphorus limits. We were one of the first systems in the state to receive a permit referencing a new lower limit back in 2013. Not looking forward to the high costs associated with the addition of a tertiary filtration system, we planned on meeting the new limit through a water quality trading program.

With the recent publication of the DNR’s draft TMDL for the Wisconsin River, we’re likely to receive a waste load allocation high enough for us to meet the new limit through a combination of source reduction and plant optimization. Spencer is fortunate to have a very strong relationship with our largest wastewater customer, the local Land O’Lakes cheese processing facility that discharges pre-treated waste to our system.

Land O’Lakes has been a very active partner from both a process control and financial perspective in the success of our system. They already do a great job pre-treating their waste down to domestic levels of TSS and BOD. They completed their own wastewater facility upgrade 3 years ago, including enhanced biological and chemical phosphorus removal, which should allow them to significantly reduce the phosphorus they discharge to us as well.

Along with source reduction, we are planning a number of small modifications to our facility to optimize our system for phosphorus removal. These include improvements to the chemical metering pumps, an in-line effluent phosphate analyzer, trials of alternative chemicals, and optimization of the biological phosphorus removal abilities of the oxidation ditch system. We have already demonstrated that we can meet the draft TMDL based lower limit of 0.4 mg/l over a six month average.

Staffing was the last area addressed during this period. Spencer had two operators in the past, but after a senior operator retirement in 2009 we decided not to hire a new second operator, but rather to provide half time support using other Public Works staff. This worked well for almost a decade, but increases in process control activities related to multiple digester operations and laboratory testing for phosphorus optimization, combined with increases in collection system activities to meet new CMOM regulations, made 1.5 FTE a struggle.

Like many small communities, Spencer was faced with the dilemma of finding highly trained and educated candidates to fill a new operator position. Without the economic resources to compete with larger systems, we focused on finding candidates willing to pursue the Department of Workforce Development’s relatively new wastewater apprenticeship program. Similar to any other trade, the apprenticeship combines on-the-job learning with traditional coursework in a structured program designed to develop the skills necessary for the job.

After a short search we found our new Assistant Operator, Ethan Perrine. Already living in Spencer, Ethan was working for Staab Construction and had just completed a carpentry apprenticeship with them. With a strong mechanical, welding, and plumbing background, Ethan is already a valuable asset to the system and is on track to achieve advanced level certification at the end of 4 years.

The solid physical condition of the plant, along with its adequate liquid and solid treatment systems, and its financial stability and staffing, means

Spencer is well situated to meet the wastewater treatment needs of our community for another 20 to 30 years.
BEAT ULTRA-LOW PHOSPHORUS LIMITS

More than 70 full-scale WWTFs have chosen Blue PRO® reactive filtration to beat phosphorus limits as low as 0.02 mg/L. With Blue PRO, you get:

- Up to 80% better chemical efficiency
- Minimal O&M requirements
- Continuous operation – no process interruption
- Modular design – easily expandable

Visit one of our full-scale Wisconsin facilities with our rep:

ICS GROUP

PAUL NYGAARD
920.405.0889
pauln@theicsgrp.com
Troubleshooting Corner Volume IX: Floc formation

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

“The supernatant layer above the settled sludge is cloudy and turbid, now what?” The basis of floc formation depends on the ability of the microorganisms to stick together as well as to stick to other non-biological particles through excocellular biopolymer bridging. When this bridging is disrupted, dispersed growth occurs. When particles are dispersed in the bulk liquid between the flocs, this often results in turbidity in the supernatant layer and often the wastewater effluent. Mechanics of floc formation is an ongoing study, but it is generally accepted that divalent cations such as calcium and magnesium encourage floc formation, while monovalent cations such as sodium and potassium encourage floc dispersion. Note that coagulants such as ferrous and iron are divalent or even trivalent (such as ferric). At higher monovalent to divalent cation ratios, dispersed growth is believed to occur.

There are many potential causes for dispersed growth. These include high bacterial growth rates, high F/M (food to microorganism) ratios, septicity, temperature changes, shock loads (different type of food than the bacteria are used to), slug loads, inhibition, toxicity, and other stresses. Note that it is believed that when bacteria are stressed they release potassium (a monovalent cation).

What does this mean? In short, this is an explanation of the science behind dispersed growth but as operators what we want to know is how can we make it clear again. Note that all dispersed growth is not composed of the same material. Dispersed single cell bacteria, dead cellular material/“fines”, and even dispersed filamentous bacteria can all contribute to turbidity. In order to make the correct operational changes identification and a diagnosis of the problem is essential. Diagnosis of what the dispersed material is can be accomplished through phase contrast microscopy at 20 x and (to a lesser extent) 10 x magnifications. Other useful information for troubleshooting includes influent and effluent analytical parameters, visual observations of the plant (foaming etc.) and a thorough microscopic evaluation conducted by a professional expert with emphasis on floc structure, presence and health of higher life form organisms, and identification, abundance, and general health of the various filamentous bacteria species present.

For example if zooglea bacteria and filaments such as type 0411 and S. natans are predominant and there is high amounts of dispersed single cell bacteria, increasing the MLSS concentration may be warranted to discourage dispersed growth. If the big picture says low F/M, filaments such as type 1851 and 0041 are predominant, and the dispersed material is mostly “dead cellular material” the sludge is likely too old and the dispersed growth is a result of endogenous conditions (starvation) and cell lysis. In this instance, increased wasting rate and a lower MLSS concentration would be warranted. In short, this represents 2 separate problems and 2 separate corrective actions, in each instance not knowing the correct way to go with the wasting rate may make the dispersed growth worse, not better.
It’s the synergy that comes from supplying both pump equipment and electrical controls to operate those pumps. It’s the one stop shop for selection and sizing as well as after-market service to the end user.

We sell solutions that provide the highest operational efficiency. We have premium-efficient pumps and motors along with advanced control strategies to reduce energy costs.

We understand your needs and the dynamics of your situation. We’ll develop customized solutions and enhanced services that you can’t find anywhere else. With one call, find out why L.W. Allen pumps and Altronex control systems have become the leading provider of pumps, controls, technical assistance and superior customer service.

Reduce your energy costs and save time. Call (800) 362-7266.
Denmark hosts December 2018 Lake Michigan meeting

The December 13th Lake Michigan District meeting at the Denmark WWTP was another successful meeting with approximately 60 operators and septage haulers, along with 7 equipment and process vendors. A special thanks to Drydon Equipment for sponsoring treats during the breaks.

The first presentation of the day was by Stephan Dagovitz of Kaeser Blowers, who spoke on PD Blowers. Stephan explained the design and application of rotary screw blowers. With rotary screw blowers, compression occurs within the block. The helical twist of the twin rotors compresses air, as it moves to the discharge. Screw blower efficiency is higher, in large part, because they rotate much faster than lobe blowers and operate with much higher isentropic efficiency. Stephan shared every wastewater plant is unique, and the first point is to focus on the system and not on individual blowers. When selecting a blower, the system and potential energy savings are important factors to consider.

Next on the agenda was Phil Ohlinger of Robert E. Lee & Associates. Phil’s presentation was titled The Ins and Outs of a GIS System. Phil began the presentation by discussing what a GIS system is: a computer-based tool for capturing, storing, manipulating, analyzing, managing, and displaying types of geographical data. Phil then went on to explain the advantages of using a GIS system for asset management of a utility system. After that, Phil walked through the necessary steps for creating a utility.

continued on page 16
ENGINEERED BLOWER SOLUTIONS
FOR AERATION SYSTEMS

Tuthill
weftec | Booth 353
MADE IN USA

WILLIAM/REID
A Division of Gasvoda & Associates, Inc.

Post Office Box 397
Germantown, WI 53022
262-255-5420
www.williamreidltd.com

800.658.0198 | www.HardyProAir.com | Antioch, IL | info@HardyProAir.com
GIS system. Phil then went into an online demonstration of water, sanitary, and storm GIS systems for some nearby communities. Phil finished his presentation by discussing how not all GIS system are created equal.

Jenny Pagel called the WWOA-LMD business meeting to order. Last quarter's minutes and treasurer's report were approved. Elections were then held to elect a new vice president. The only nomination received was for Kate Marnul.

The next item on the agenda was the WDNR update by Dick Sachs. First off, for the DNR update, applications for the February 6th Operator Certification exams in Plover are now available online. The application deadline for the Operator Certification exam is January 9th.

The second item was that the Collections System study guides are now available, and the exam for the subclass is now being offered.

The third item is that study guides are also available for Subclass A5, Anaerobic Treatment of Liquid Waste and Subclass N, Total Nitrogen Removal. Exams for both subclasses are also now being offered. Dick noted that the Anaerobic Treatment of Liquid Waste subclass applies to a small set of primarily industrial facilities that use anaerobic digestion to treat liquid waste. It does NOT apply to facilities that anaerobically digest sludge. Also, the Total Nitrogen Removal subclass applies only to facilities that have a total nitrogen effluent limit. This applies primarily to systems that discharge to groundwater. It does NOT apply to facilities with just an ammonia-nitrogen effluent limit.

The fourth item is that public comments are being accepted on the draft TMDL for the Upper Fox and Wolf River Basins through January 18, 2019. Dick stated that after responding to the comments received, the DNR will be submitting the TMDL to the EPA for approval. Upon receiving EPA's approval, DNR will be basing effluent limits for TSS and Phosphorus in permits in those basins, upon the waste load allocations for those pollutants contained in the TMDL.

For fifth and last DNR update item, Dick announced that he will be retiring and his last day will be December 21st. Dick stated until his replacement is on the job, to contact your DNR engineer or Kelley O'Connor if you have any permit-related questions. Roy Van Gheem has stepped up to serve as the regional Wastewater Operator Certification Coordinator; contact Roy with any Operator Certification issues.
questions. Following the DNR update, Don Linter gave the WWOA Board of Directors’ update.

The third presentation of the day was by Steve Stanish of Aqua-Aerobic Systems. Steve’s presentation was titled Achieving Low Total Phosphorus with Cloth Media Filtration. Steve described the process required to remove phosphorus with cloth media filtration. Steve listed the filtration goals, which are to maximize removal of solids and hydraulic throughout, while minimizing backwash and maintenance. Steve then went into how a cloth media filter works, including showing an animated video of one operating. Following the video, Steve explained the results of many pilot tests that were conducted in Wisconsin. Steve ended his presentation by providing other applications for cloth media filtration, besides phosphorus removal.

The last presentation of the day was by Dave Redmon of Redmon Engineering Company. Dave’s presentation was titled Aeration, Mass Transfer, and Oxygen Transfer Efficiency. Dave started off by stating that typically aeration is the largest energy consumer at a WWTP.

Dave then went on to discuss what clean water testing and provided reasons why to conduct a clean water testing. Dave explained some recent history regarding clean water testing. Dave then went on to describe the future aeration trends for large and small WWTPs. Lastly, Dave finished the presentation by going through the benefits of conducting off-gas analyses.

Erika Sisel, the Public Works Director, gave an introduction of the WWTP by describing the flows, loadings, and treatment processes. A guided plant tour followed the plant introduction. The next meeting will be at Oshkosh on February 14, 2019. Special thanks to Village of Denmark’s WWTP Staff for hosting the meeting.

Minutes submitted by Holly Blazer, Lake Michigan District Vice President and Josh Steffleck, Lake Michigan District Secretary/Treasurer.

---

**YOUR PARTNER IN PROTECTING OUR MOST PRECIOUS RESOURCE.**

**NOW HIRING**

- **Water/Wastewater Engineer**
  Design & Project Engineer with a B.S. or M.S. in Civil or Environmental Engineering & a Minimum 3-Years of Design Experience
- **Water/Wastewater Designer-Drafter**
  Design Civil or Environmental Projects with a Minimum 2Yr, 4Yr or Technical Degree
- **Electrical Engineer-Industrial Projects**
  Electrical Engineer with Experience Designing Industrial Systems, Including Water & Wastewater Treatment Facilities, Paper Mills & Industrial Dairies

**WATER SYSTEMS**

**WASTEWATER SYSTEMS**

**STORMWATER MANAGEMENT**

**FINANCING & GRANT ASSISTANCE**

**CONSTRUCTION SERVICES**

**DESIGN-BUILD**

**PUBLIC/PRIVATE PARTNERSHIPS**

**NEENAH WI**
MACHESNEY PARK IL
VALPARAISO IN

**920 751 4200**
**mcmgrp.com/careers/**
53rd annual WWOA conference info, Oct. 8-11 Green Bay

### Hotel Information

<table>
<thead>
<tr>
<th>Hotel</th>
<th>Address</th>
<th>Phone</th>
<th>Email &amp; Website (copy and paste into your browser)</th>
<th>Rates</th>
<th>Release Date</th>
<th>Group Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyatt On Main*</td>
<td>333 Main Street, Green Bay, WI 54301</td>
<td>920.432.1234</td>
<td>Call 920.432.1234</td>
<td>Single/Double $120.00</td>
<td>9/25/19</td>
<td>WI Wastewater Operators</td>
</tr>
<tr>
<td>Hampton Inn &amp; Suites</td>
<td>201 Main Street, Green Bay, WI 54301</td>
<td>920.437.5900</td>
<td>Call hotel directly at 920.437.5900 for room reservations</td>
<td>Standard King and Double Queen $144.00</td>
<td>9/10/18</td>
<td>WI Wastewater Operators</td>
</tr>
<tr>
<td>Holiday Inn Green Bay Stadium</td>
<td>2785 Ramada Way, Green Bay, WI 54304</td>
<td>1-800-HOLIDAY</td>
<td>Call 1-800-HOLIDAY</td>
<td>Run of the House $110.00</td>
<td>9/8/19</td>
<td>GROUP BLOCK CODE: WWW</td>
</tr>
<tr>
<td>Tundra Lodge Resort and Waterpark</td>
<td>865 Lombardi Avenue, Green Bay, WI 54304</td>
<td>1-877-886-3725</td>
<td>1-877-886-3725</td>
<td>Double Queen Suite $99.00</td>
<td>9/20/19</td>
<td>Wisconsin Wastewater Operators Association</td>
</tr>
</tbody>
</table>

*Hyatt On Main is host hotel directly connected to the KI Center

### Vendor Information

**EARLY BIRD REGISTRATION IS OPEN**

Now through August 1st, 2019

Early Bird Cost per Booth $500
MEKCO MANUFACTURING

CALL US TODAY!
WE CAN SUPPLY YOUR NEXT F.R.P BUILDING OR ENCLOSURE
ANY SIZE. ANY COLOR. ANY USE.
920-693-8163 | WWW.MEKCO.COM
PROUDLY DESIGNED AND FABRICATED IN WISCONSIN

A PROUD MEMBER OF
ACMA
AMERICAN COMPOSITES MANUFACTURERS ASSOCIATION
We move water.

Full Service Process Control Integration and Service Expertise for Fresh Water and Wastewater Treatment Plants

Aeration
Alarm Systems
Calibrations
Chemical Feed Systems
Controls
Cross Connections
Instrumentation Devices
Level Measurement
Lift Stations
Process Equipment
Pumps/Rotary Equipment
Remote Monitoring
SCADA/Telemetry Panels

B&M Technical Service, Inc.
715.228.7604  bmtechservice.com
Tues., April 9
7:30AM WWOA Training Event
8AM WWOA Exam Reviews
Both events at Sheraton Hotel Brookfield

Thurs., April 9
WWOA Spring Clays
Lunch at noon
1PM Shot Gun Start
Wild Wings Sportmen’s Club
Campbellsport

Go to wwoa.org/calendar to register
32nd Annual Classic Collection System Seminar Watertown, WI

WHEN: Thursday June 6th, 2019

WHERE: Turner Hall, Watertown, WI

MORNING SESSION:
Collection System Technical Session

Tentative Technical Topics:
Use and Management of MMSD Deep Tunnels
In-house Remediation of I&I
Safety: Trench Safety
Force Main Mapping & Assessment w/ Smart Ball
DNR –Update
Up Newton Creek SSO Case Study – Superior, WI
What is NASSCO all about?
GIS for CMOM
GIS Asset Management

AFTERNOON SESSION:
Vendor presentations and Equipment Displays, Door Prizes
Product Demonstrations

DNR CREDIT HOURS
6 Credit hours will be available.

CO-SPONSORS: Wisconsin Section – Central States Water Environment Association
Wisconsin Wastewater Operators Association (WWOA)

Online Registration when available- www.cswea.org

***MARK YOUR CALENDAR***
12th ANNUAL NORTHWOODS COLLECTION SYSTEM SEMINAR– JULY 25th, 2019
EAGLES CLUB – MARSHFIELD, WI

General Information Contact:
Amy Post - 414-291-8840 (Symbiont)

Vendor Information Contact:
Pete Hartz – 920-262-4085 (City of Watertown)
We provide professional control system integration including **SCADA & reporting software, PLC programming, motor control & drives, instrumentation, radio & fiber communications, & UL control panels.**

All backed by an **unmatched dedication to service.**
Renew Your Membership

If you haven’t paid your membership dues yet, please do so ASAP!!

You wouldn’t want to miss out on all the exciting news that is in each issue of the Clarifier, now would you?

If you have questions on your membership number, renewal date, or want to pay your renewals, contact secretary@wwoa.org or call 608-355-3081.

The Clarifier needs you!

Do you have something to say?

Have you solved a unique problem at your plant?

Won recognition for a job well done?

Hired someone new?

Wish to share your opinion on an issue?

How about telling us about it in the Clarifier?

The front cover of every issue includes the following statement:

“The Clarifier is the publication of the Wisconsin Wastewater Operator’s Association and is intended to inform and educate the membership on issues related to the treatment and control of wastewater.

All members are encouraged to contribute to the mission of the Clarifier."

Submitting an article can be as easy as mailing a letter or sending an email. Perhaps you are not a typist or do not have access to a computer? No problem, just write your thoughts down on a piece of paper and we will do the rest.

Or give me a call and we will figure something out.

Jon Butt, Clarifier Editor
c/o Symbiont
6737 W. Washington St., Suite 3440
Milwaukee, WI 53214
Jon.butt@symbiontonline.com
Office: 414-291-8840
Keep service personnel safe from hazardous valve pits with the Gorman-Rupp Above Ground Submersible Valve Package and explosion proof Infinity pump!

- Single source responsibility! Station and pump from the same factory, made in the USA
- Exercise valves without entering a confined space
- Separate moisture and thermal switches
- Reduced installation time and associated costs
- Backed by a 60 month station warranty and the largest service and support team in the state!

Gorman Rupp SF Series (Infinity) with NEMA premium efficiency motor

Call 920-733-4425 or go to craneengineering.net
List of Advertisers

Peterson and Matz page 4  B&M Technical Services/Shinmaywa page 16
USA Blue Book page 5  McMahon Associates page 17
C;arl Doetz page 6  Visu Sewer page 18
Cady Aquastore page 7  Mekco Manufacturing page 19
Process Equipment Repair page 8  B&M Technical Services page 20
Energenecs/Huber page 9  JF Ahern page 21
MSA page 10  Energenecs page 23
ICS group page 11  Strand Associates page 24
Ruekert Mielke page 12  Crane Engineering page 25
LW Allen page 13  Staab Construction page 26
Symbiont page 14  Dorner page 27
Hardy Pro Air page 15  North Central Labs page 28
back cover

Staab Construction
100% Employee Owned
Municipal - Industrial

Turnkey – Rebuilds – Retrofits - Preventative Service Maintenance
Serving all aspects of your water & wastewater treatment system infrastructure
Process Equipment, Piping, Steel/Concrete Tanks, Lagoon Systems, Lift Stations, More........

Fully Equipped Service Truck w/ 2-Ton Crane
Mobile Truck Crane - 21-Ton Capacity
Confined Space Permitted/Equipped

Quality Equipment Technicians/Installers
Process Piping & Concrete Journey Trades
Bonded, Insured, Warranty

-Your Contractor of Choice Serving Wisconsin, UP Michigan, Illinois, Minnesota, & Iowa -

Contact Our Service Department
Marshfield, WI 54449
Ph: 715-387-3429 Fax: 715-384-4846
service@staabco.com

Visit our website for additional listing of services.
www.staabco.com
34 Years Serving Water and Wastewater

Next day delivery in Wisconsin for most items

Lower shipping cost

Free technical support for equipment and test procedures


North Central Laboratories

1-800-648-7836
www.nclabs.com