

# *The Clarifier*

WISCONSIN WASTEWATER OPERATORS' ASSOCIATION, INC.

Volume 174, February 2008



**Village of Trempealeau Wastewater Treatment Plant**

***42nd Annual W.W.O.A. Conference  
September 30 - October 3, 2008  
Holiday Inn Hotel & Convention Center  
Stevens Point, WI***

**HOST:  
Stevens Point Wastewater Treatment Facility**



# The Clarifier

Visit our Web Site at [www.wwoa.org](http://www.wwoa.org)

Volume 174, February 2008



## President's Message

What an incredible winter we have been having this year. The month of December brought us lots of snow, about every three days it would snow or at least every weekend. Then we encountered January

with record high temperatures, along with those devastating tornados that roared through the southern part of our state, and the second half of January is ushering in some cold weather as the "Packers" witnessed in the NFL Championship game in Lambeau Field. Lets all hope February will bring us some signs of spring at least get us thinking of spring. I know the WWOA regions put together a busy month with a number of very interesting meetings. Try to make time to get to one in your area. I have always noticed that February meetings are some of the most attended. It must be that a lot of folks want to shed some of that long hard winter and renew some friendships of fellow Operators. The agenda of upcoming meetings is posted on our web site.

Again this year the Career Development Committee will be displaying at the Wisconsin School Counselor's Association Conference in Stevens Point. The thought is to persuade the local high school guidance counselors to inform their students of the wastewater career. We are in the process of having new wastewater career brochures printed. I would like to extend the same challenge/opportunity to all of you as Kay Curtin did last year, to visit your local high school guidance counselors armed with promotional material about our profession. Let us know and we will get some material out to you.

Not only is it important to promote and recruit individuals into our profession, the new or beginning employee

should be honored for his or her accomplishments in the Wastewater field. Kay Curtin is spearheading the introduction of a new award that will be presented this year to a hard working new (Rookie) wastewater professional. The award should be finalized in March so look for information in the next issue on how to nominate some deserving person for this award.

Speaking of the next issue, which would be April and I am sure spring will be here by then, if you have anything to share with the rest of us, please consider submitting your thoughts or articles to be published in the "Clarifier"; this is your publication. If your thoughts and ideas are not as literary, you are always welcome to express them to the Board members and regional officers.



## Wastewater Systems

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## VILLAGE OF TREMPEALEAU WASTEWATER TREATMENT PLANT

By Mark S. Davy, P.E., Davy Engineering Co.

**INTRODUCTION:** The Village of Trempealeau constructed their original activated sludge wastewater treatment facility in 1970. Due primarily to population growth, the Village was facing overloads both hydraulically and organically in the near future. In addition, mechanical problems were complicating operation and required expensive repairs.

The Village hired Davy Engineering Co. to conduct a Facility Plan to evaluate treatment alternatives. A Facility Plan was completed in 1994 that recommended converting the use of the old facility into a bar screen, process control tank and aerobic digester. Most of the biological treatment would be accommodated by constructing a new, activated sludge oxidation ditch.

**PLANT DESIGN/EFFLUENT LIMITS:** Completed in 1997, the current facility was designed to treat:

Flow: 235,000 gallons per day  
 BOD: 375 pounds per day  
 Suspended Solids: 440 pounds per day  
 Phosphorus: 16.5 pounds per day

Monthly average effluent limitations are:

BOD: 30 mg/L  
 Suspended Solids: 30 mg/L  
 Phosphorus: 150 lbs/month

**PROCESS DESIGN:** Wastewater from Trempealeau flows by a combination of gravity and pressure sanitary sewer mains to the treatment plant.

Wastewater enters the plant at the headworks where large solids and debris are collected by the bar screen (1). From there the wastewater flows to the process control tank (2) and on to the oxidation ditch (3).

The oxidation ditch is a series of aerated channels. The wastewater typically flows around the outer channel and transfers to the inner channel through a transfer pipe in the common wall between the channels. The flow continues around the inner channel and enters the clarifier (4), where the sludge is separated from the treated water.

The treated water flows over the clarifier weirs to the effluent launder and discharges to the effluent sampler and Ultraviolet Disinfection System (7). After the water has been disinfected, it continues through a 10" outfall pipe until it discharges to the Mississippi River.

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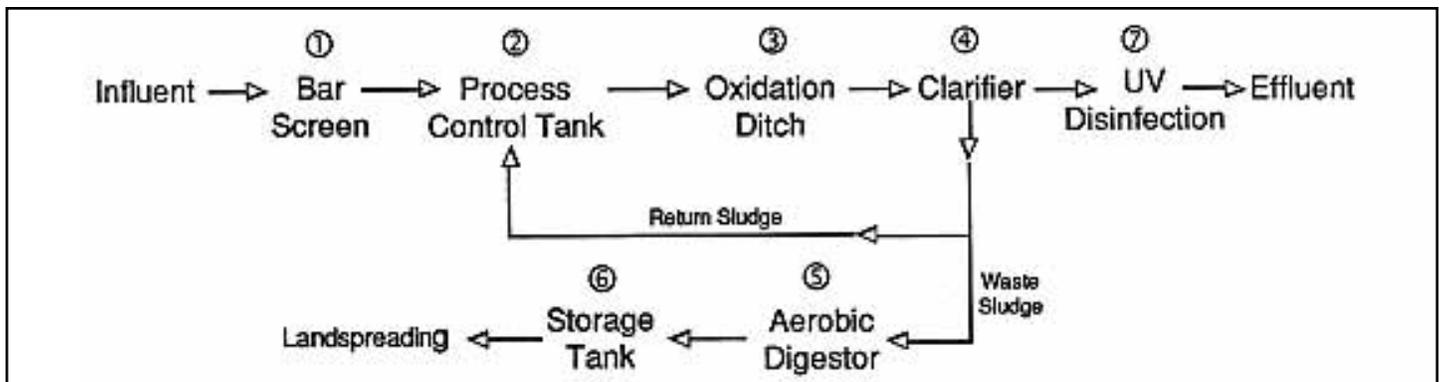
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The bacteria and solids that settle to the bottom of the clarifier are called settled sludge. The settled sludge is piped to a sludge well where it gets pumped up to the sludge division box. The flow from the sludge division box is split as return sludge to the oxidation channels or as waste sludge to the aerobic digester (5).

The decant from the aerobic digester returns to the headworks building and then back to the oxidation ditch. The treated sludge from the aerobic digester is pumped to the sludge storage tank (6).

**OPERATION & MAINTENANCE:** In 2007, the Village of Trempealeau and the wastewater treatment facility operator, Todd Lakey, were honored to receive the USEPA's Outstanding Operation and Maintenance Award. The Village received the first place award in the "Small - Secondary Treatment" category, first at the regional level and then at the national level. The award recognizes the excellent pollutant removal along with the commitment of the Village to operate a clean, cost effective facility. The national award was presented to Todd Lakey at WEFTEC in San Diego last October. Congratulations to Todd and the Village!



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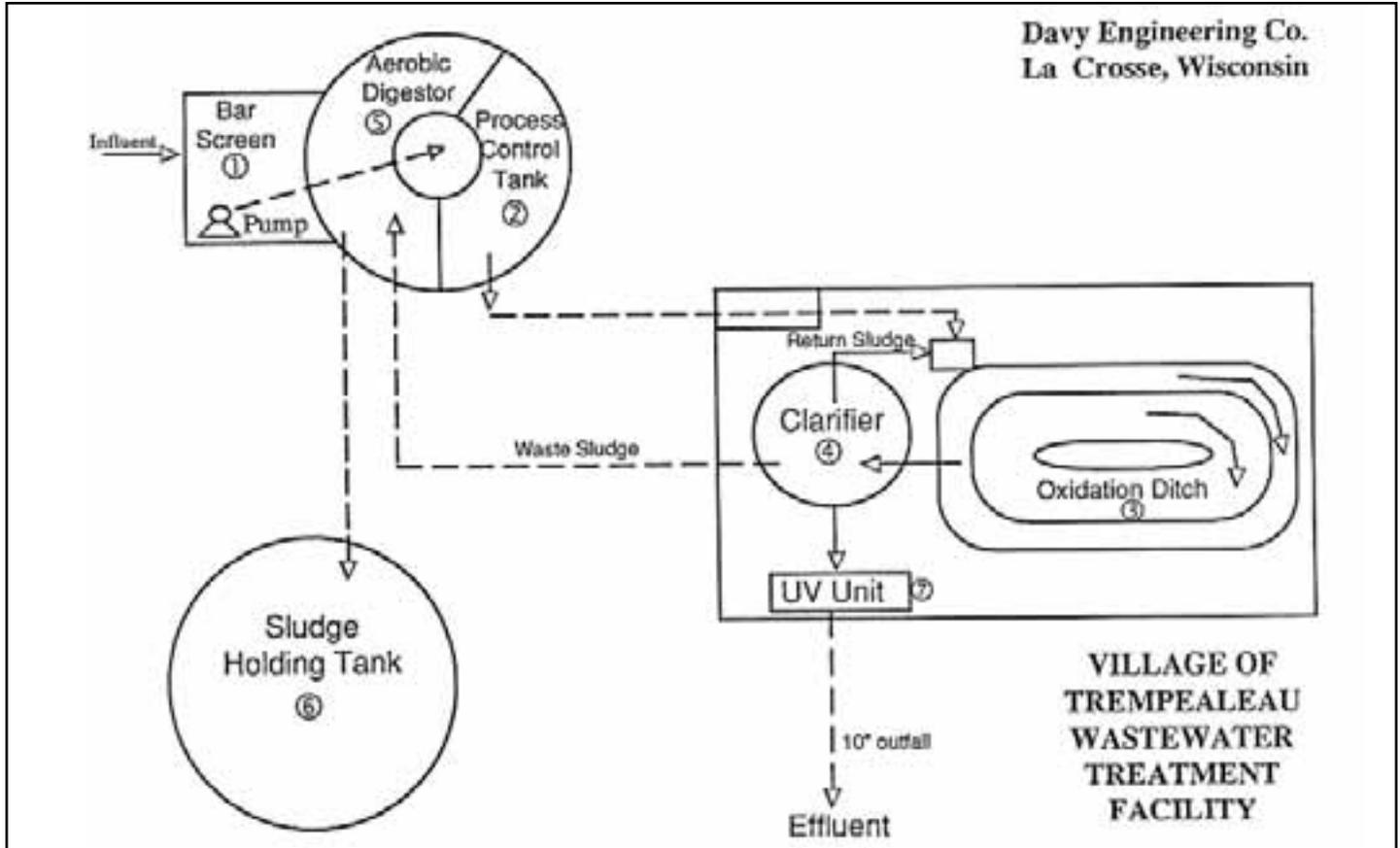
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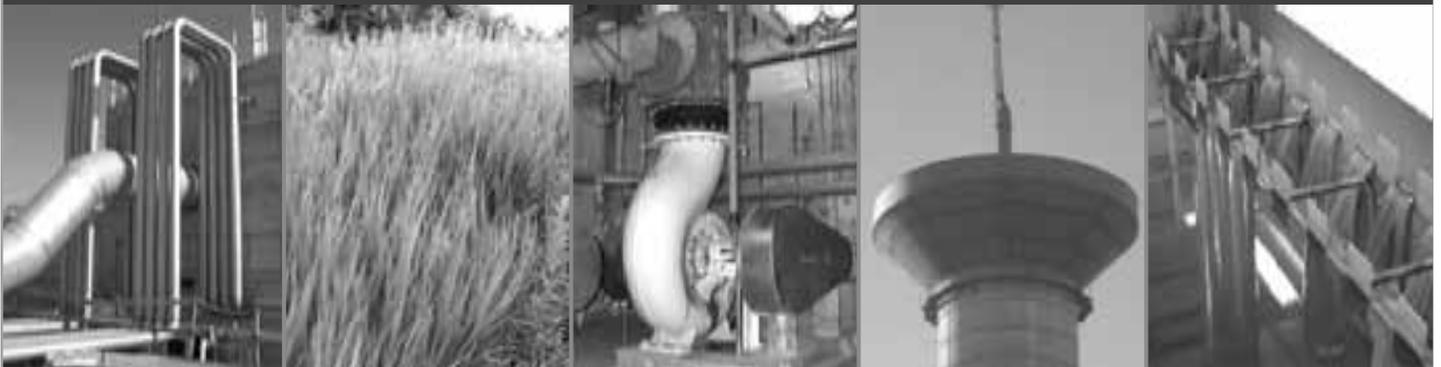
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## BAXTER & WOODMAN, INC. ANNOUNCES PROMOTIONS

Baxter & Woodman, Inc., Consulting Engineers, one of the Midwest's largest civil engineering firms, is pleased to announce the promotions of Senior Engineer Carl F. Fischer, PE to Wastewater Department Manager and Project Manager Carolyn A. Grieves, PE to Water Department Manager.

Baxter & Woodman is an industry leader in all areas of water supply, collection, treatment, storage, distribution, preservation, and protection and conservation. "Division of the Water/Wastewater Department was envisioned when the company reorganized several years ago," said Larry Thomas, Vice-President & Chief Operating Officer. "With this change, the two departments will be able to better focus our efforts in these areas."

Mr. Fischer earned a Bachelor of Science degree in Civil Engineering from the University of Illinois. He is a licensed Professional Engineer in the State of Illinois with more than 30 years of experience. His technical expertise includes wastewater, potable water and stormwater projects.

Ms. Grieves also earned a Bachelor of Science degree in Civil Engineering from the University of Illinois, and a Master of Science degree in Environmental Engineering from the University of Iowa. A licensed Professional Engineer in the State of Illinois, Ms. Grieves joined Baxter & Woodman in 1996. Her main focus is on the design of water supply, treatment and distribution systems.

Baxter & Woodman, Inc. is an Engineering News-Record Top 500 Design Firm with more than 250 staff members. The company provides planning, design, construction and technology services related to water, wastewater, transportation and stormwater facilities for local governments, sanitary districts and state agencies throughout the Midwest. Environmental, geographic information systems (GIS), water and wastewater operations, and advanced technology needs complement the firm's civil engineering expertise.

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**Government Affairs Seminar  
February 28, 2008**

**Marriott Madison West, 1313 John Q. Hammons Drive, Middleton, WI**

8:00 **Registration**

**Session Moderator: Jeff Mayou**

8:25 **Welcome/Opening Remarks**  
*Bernie Robertson*

2:45 **Mercury & PMPs**  
*Tom Mugan and Kathy White*

**Session Moderator: Bernie Robertson**

3:20 **DNR Update**  
*Roger Larson*

8:30 **Keynote -**  
*Matthew Frank, DNR Secretary (or designee)*

4:00 **Seminar Ends - See you next year!**

9:00 **NR 149 Challenges Ahead**  
*Rick Mealy*

**WWOA Conference Schedule**

2008	-	Holiday Inn, Stevens Point
2009	-	Regency Suites & KI Center, Green Bay
2010	-	Kalahari Resort, WI Dells
2011	-	La Crosse Civic Center

9:20 **Legacy Pollutants**  
*Kevin Shafer*

9:45 **Great Lakes Compact**  
*Chuck Ledin*

10:15 **Morning Break**

**Session Moderator: Dave Arnott**

10:30 **TMDLs**  
*Bob Masnado and Paul Kent*

11:15 **Drug Take-Back Program**  
*Kendra Jacobsen and Ron Dickrell*

12:00 **Lunch**

**Session Moderator: Bill Desing**

1:00 **Transition Planning**  
*Tom Sigmund and Marti*

1:45 **Asset Management and Sustainable  
Infrastructure**  
*Alan Ispass*

2:30 **Afternoon Break**



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## Government Affairs Seminar General Seminar Information

**Date:** Thursday, February 28, 2008

**Payment:** Please return this form with your payment (pre-payment required) by **February 14, 2008**. On-site registrations will only be accepted with full payment at time of registration. Purchase orders and direct company billing will not be accepted. Make checks payable to **UW-Madison**. Send registration and payment to:

**Information:** Contact Bernie Robertson at (608) 275-3312

**Fee:** \$75.00 Pre-registration before 2/14/08  
\$85.00 Day of seminar or after 2/14/08  
(both fees include program materials, breaks, and lunch)

**Where:** Marriott Madison West  
1313 John Q. Hammons Drive  
Middleton, Wisconsin 53562  
(608) 831-2000 or (800) 228-9290

CALS Conference Services  
620 Babcock Drive  
Madison, WI 53706  
P: (608) 263-1672  
F: (608) 262-5088

**Lodging:** Each registrant is responsible for his or her own hotel reservation. Make your reservations early! A block of rooms (\$124 single/double) will be held at the Marriott Madison West until January 28, 2008.

**Online:** Register at [www.peopleware.net/2723](http://www.peopleware.net/2723)

**Credit:** DNR credit slips (6 hours) will be available at the end of the seminar.



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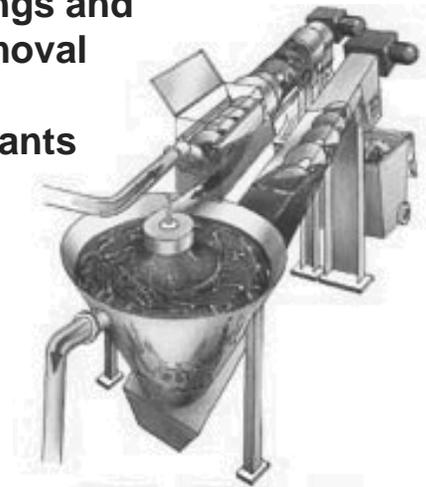
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The City of Mayville Utilities is accepting applications for employment as a Water/Wastewater Utilities Operator.

**RESPONSIBILITIES INCLUDE:** Maintenance and operation of buildings, grounds equipment, distribution and collection systems, meter reading, water/wastewater facilities, liftstations, lab (lab 2-3 hours per day or as required), this position will perform general lab duties in the absence of the lab technician, on call and scheduled weekend and holiday duties.

**EDUCATION REQUIREMENTS:** Wastewater basic general plus a minimum lab sub grade and Water Grade G, D, I or must obtain within 6 months of employment. All applicants must possess a Commercial Driver's License or must obtain within 6 months of employment.

The position will begin after February 1, 2008; the starting wage is \$17.14 with step increases to \$19.15 within 2 years + WDNR license pay, water GDI \$0.35 per hour, wastewater basic \$0.20, plus for advanced \$0.30. Wage is per current union contract. The Utility offers an excellent fringe benefit package.

Applications may be obtained at the Water/Wastewater Utilities Office, 400 Kekoskee St., Mayville, WI 53050, or by calling 920-387-7906, or by email [rwellner@mayvillecity.com](mailto:rwellner@mayvillecity.com). Applications will be accepted until position is filled.

Ronald A. Wellner  
Director of Utilities

### Notes from the Editor....

Attention all members: Several important events will be coming up very soon including:

- The Annual Government Affairs Seminar is scheduled for Thursday, February 28, at the Marriott Madison West sponsored by WDNR, Central States, WWOA, MEG and League of Wisconsin Municipalities.
- 21st Collection System Seminar is scheduled for June 5 at Turner Hall in Watertown and August 14 at the Holiday Inn in Marshfield. This will be the first year for holding two meetings. This seminar is jointly sponsored by WWOA and Central States.

Consult the flyers either mailed or to be mailed to all members for more information on each program.

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**Northwest District Fall Meeting  
Birchwood, WI  
October 12, 2007**

It was a beautiful day in the Blue Hills of Northwest Wisconsin. Tagalong golf and conference center could not have been any better of a setting for the regional meeting. Our chairman, Duane Nelson, welcomed the operators group. Duane then covered some housekeeping issues and then introduced the Village President, Morris Gillette. Morris welcomed the group as well but could not close until he told a fish story. It was good for an early morning laugh. Chairman Nelson then introduced the first presenter who was Walt Boorsman from Polyurea Midwest. Walt's topic was on the uses for polyurea.

Chairman Nelson then introduced the next presenter, Ron Dickrell, from the Marshfield Wastewater Utilities. Ron's presentation was on the emerging contaminants being found in the waters of the state, namely prescription drugs, endocrine disrupters, and personal care products. The unused products and drugs are finding their way to the waters of the state.

Conventional wastewater plants do not have the ability to remove the substances, therefore passing through the plants to the lakes and rivers. Marshfield took the lead and formed a committee to address the problem. When the regulatory agencies were contacted it was found that there were no "Best Management Practices" (BMP). Marshfield coordinated a take back day which cost about \$10,000. The money was used for yard signs, community group presentations, and a bag stuffer for when you picked up a prescription drug order. The first take back day collected 500 pounds. When people brought drugs in they were asked a few questions to better understand the personal storage and quantity. This program, which is in its fourth year now has seen improvements in several areas, like reduction in drug thief burglaries, doctors being more aware of the quantity of drugs prescribed, and reduced the potential of self medication by not having unused drugs around the house. One surprising contributor was a veterinarian who had unused drug for animals.

### Wastewater Training Solutions - Operator Training Schedule

Anaerobic Digestion-Intro	February 12 & 13, 2008	Fond du Lac	\$160 / 12 DNR credits
Anaerobic Digestion-Adv.	February 14, 2008 and May 1, 2008	Fond du Lac	\$360 / 36 DNR credits
Phosphorus Removal - Intro	March 10 & 11, 2008	Chippewa Falls	\$160 / 12 DNR credits
Phosphorus Removal - Adv	March 12 & 13, 2008	Chippewa Falls	\$160 / 12 DNR credits
Wastewater Lab - Intro	March 18, 19 & 20, 2008	Stevens Point	\$240 / 18 DNR credits
General Wastewater Treatment	March 24 - 28, & May 6	Madison	\$360 / 36 DNR credits
Wastewater Lab - Adv	April 1 & 2, 2008	Fond du Lac	\$160 / 12 DNR credits
Math for Wastewater Operators	April 3, 2008	Fond du Lac	\$80 / 6 DNR credits
Mechanical Sludge Handling	April 14 & 15, 2008	Green Bay	\$160 / 12 DNR credits
Wastewater Disinfection	April 16 & 17, 2008	Green Bay	\$160 / 12 DNR credits
Activated Sludge - Intro	April 21 & 22, 2008	Madison	\$160 / 12 DNR credits
Activated Sludge - Adv	April 23 & 24, 2008	Madison	\$160 / 12 DNR credits
Ponds and Lagoons - Intro	April 29, 2008	Richland Center	\$80 / 6 DNR credits
Ponds and Lagoons - Adv	April 30, 2008	Richland Center	\$80 / 6 DNR credits

**To register: call Dan Tomaro at (608) 770-5144, or online at [www.wastewatertrainingsolutions.com](http://www.wastewatertrainingsolutions.com)  
or mail to 219 Janesville Street, Oregon, WI 53575**

**On-site training is also available, call Dan to make arrangements.**

One draw back after the collection was the ability to transport the drugs to an incinerator across the state lines. DEA said no, so law enforcement volunteered to drive the drugs to an incinerator in the NW part of the state. So far the take back program in Marshfield has collected 1085 pounds of drugs. That is 1085 pounds that are not going into Mill Creek. The future of the program is bright and many communities are getting on the bandwagon and there will likely be a state committee formed to coordinate and promote this program. I say congratulations to Ron Dickrell and the Marshfield wastewater facility.

Chairman Nelson introduced the next presenter, John Walther from E.L. Smith Co. John's presentation was on magnetic lifting devices for manhole covers and valve box covers. John briefly covered the current issues facing the public works department:

- Workforce development
- Aging work force
- Regulation compliance
- Work related injuries

Injuries related to improper lifting devices and techniques that result in workmen comp. claims. Proper lifting devices can reduce bending, prevent hand and feet injuries, and prevent long-term back injuries when removing manhole covers and valve box lids. These magnetic devices can also be used for catch basin covers, picking up cutting blades for plows, ductile iron pipe, round stock, and plate steel.

After a great lunch Chairman Nelson introduced the next presenter, Sue Wojtkiewics from S.E.H. Sue spoke on construction site erosion control. Sue's first comment was "THE SOLUTION TO POLLUTION IS NOT DILUTION-ITS CONTAINMENT" An average construction work site can erode 30 tons/acre of sediment off site if not contained. The newest regulation on erosion control states that construction site with land disturbance of one acre or more will need a storm water control plan. Any site of less than one acre will need to follow best management practices. BMP's should consider construction site management practices, storm water management practices, site monitoring, and finally notifying the DNR when construction is complete. A storm water control plan needs to show how to handle peak flows, how to handle sediment and silt fence installation. Silt fences need to be temporary, trenched in, maintained

and not in ditches. If infiltration basins or dry ponds are constructed, they will need to be cleaned out occasionally. These basins will occupy lots of space and can be a safety liability so placement is significant. Other types of storm water control are grass swales and rain gardens. When construction project is completed then a notice of termination will need to be submitted to the DNR.

Chairman Nelson introduced the next presenter, Rocco Raymond from S.E.H. Rocco's topic was on "Why a Utility Master Plan?" Rocco started by listing what a master plan should take into consideration. A plan should consider purpose/problem, area of construction, water related issues, wastewater-related issues, service area, and storm water concerns. Another component is matching dollars to the work that needs to be done. Existing conditions need to be considered such as climate, topography, geography, soils and water resources (wet lands, flood plains, lakes, streams, aquifers, and springs). Other considerations are projected populations, new regulations and zoning. When considering water requirements you will need to project into the future, look at developable land, well capacities, storage capacities, distribution sizing, system loops, booster

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stations (if elevation differences), fire flow analysis, and a modeling projection.

When considering wastewater requirements you will need to project 20 years into the future for a plant and 40 years into the future for interceptors. Other considerations are: gravity vs. force main, existing flows, lift stations, mains, and growth area. Storm water requirements need to look at existing system, develop a management plan, storm water quality, and receiving streams. Storm water plans have to show 40% reduction with existing system, 80% reduction with new construction, and no additional peak flow to receiving waters.

Chairman Nelson introduced the final presenter, Randy Bartz from Coating Resources Inc. Randy's presentation was on protective coatings used in and around water/wastewater plants. Some of the plant variables include moisture, immersion, abrasion, chemicals, weather, and high temperatures. Surfaces coated can be equipment, piping, valves, basins, tanks, vessels, floors and structures. A significant

problem at facilities is corrosion, which is the deterioration of material because of reaction with its environment. Corrosion can be slowed down or even stopped with cathodic protection and a proper coating on the surface. The three main causes of corrosion in concrete & masonry are:

- Porosity - the air voids in concrete and masonry
- Alkalinity - concrete has a pH of 12, therefore, it is very reactive with materials having less than 6 pH, rain water is about 5.5 pH
- Laitance - a surface layer found on all poured and precast concrete, composed of unreactive portland cement, fine sand and dust
- Concrete will deteriorate in the presence of salts, sugars, acids, most alkalines, nitrates, and sulfates.

For proper steel preparation it is important to use an abrasive blast to rough the surface or you can use hand and power tool cleaning to rough surface. This roughing will ensure a proper adhesion of the coating.

## A Trusted Partnership

"UPGRADING our wastewater treatment facility was a challenge due to the small area and floodplain issues. MSA Professional Services developed an innovative solution that allowed us to reuse existing structures and underground piping. The design successfully addressed floodplain concerns and resulted in a facility with room for future expansion."

— Port Edwards Village Administrator Joe Terry, center,  
with Village President Edward Saylor, right,  
and WWTF Operator Steve Vechinski, left

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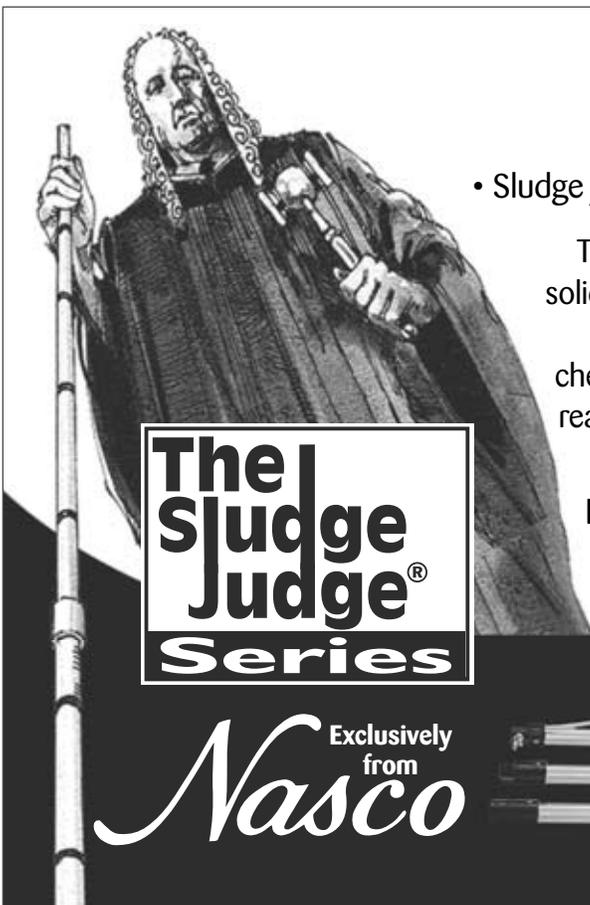
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Randy next went into the make up of paint. A typical gallon of paint contains volatile solvents, resin (binder), and pigment. Any given paint formula could have 15-20 different components. Coatings have many different properties and there are strengths and weaknesses for all of them as well as applications. Below is a list of coatings and their Strength (S) and Weaknesses (W):

- Acrylic Emulsion (Latex)—S-flexibility, water based, and fast drying-W-will not resist abrasion, chemicals and solvents
- Acrylic Epoxy (Waterborne)—S-resist chemicals, solvents and fast drying-W-two component, limited pot life
- Oil Based & Modified Alkyd—S-low cost, good penetration/wetting traits-W-slow drying, not resistant to abrasion, chemical, or solvents
- Coal Tar Solutions—S-resist moisture, corrosion resistant-W-not resistant to abrasion, solvents
- Coal Tar Epoxy—S-good adhesion, high solids, suitable for immersion-W-limited color selection, two components, and limited pot life
- Epoxy Polyamide—S-good adhesion, resist chemicals, and solvent-W-no exterior gloss retention, two component
- Epoxy Amine—S-resist abrasion, chemical, and solvent-W-two component, tendency to yellow
- Zinc-Rich Organic—S-cathodic protection, rapid recoatability, W-acid and solvent resistant
- Vinyl Ester—S-resist abrasion, acid, chemicals, can be immersed-W-critical recoat time, limited pot life, costly
- Aliphatic Polyurethane—S-resist abrasion, chemical, solvents, exterior durability-W-two component, limited pot life, costly
- Fluoropolymer—S-best color and gloss stability, resist abrasion, chemicals, solvent, and good color selection-W- cost, two part, limited pot life.

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Respectfully submitted,

Wally Thom-NWWOA Secretary

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**North Central District Changes:**

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- Vice Chair - Lyle Lutz
- Treasurer - Ken Bloom
- Secretary - Rich Boden

**Steering Committee:**

Ron Dickrell & Matt Saloun

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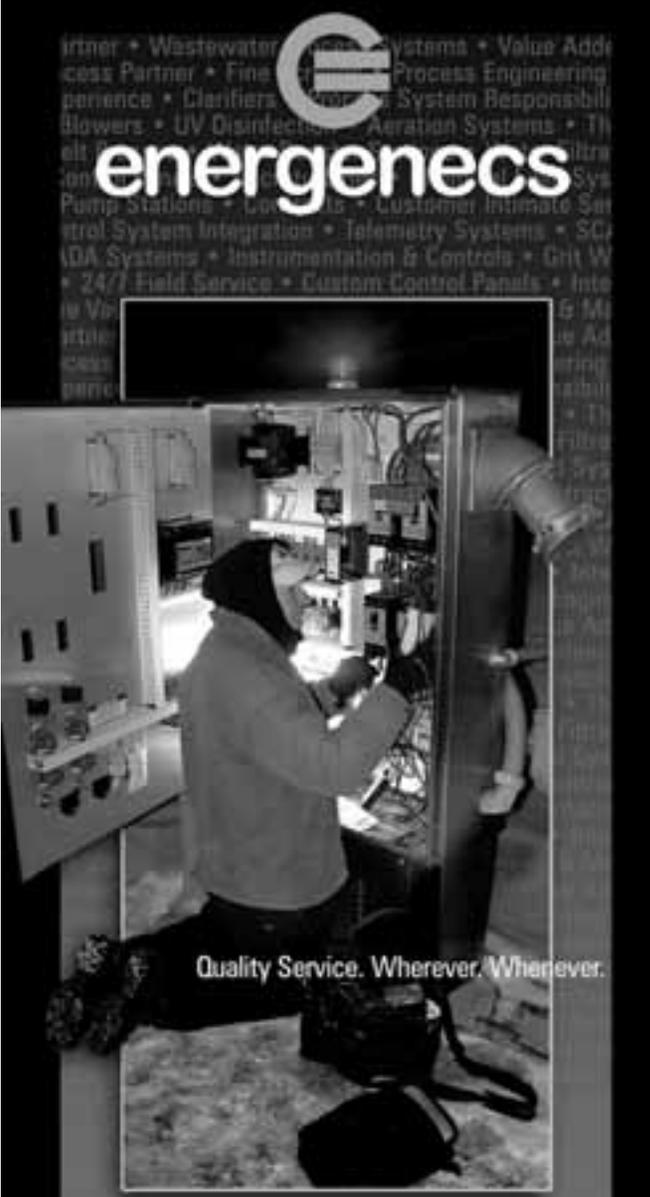
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*Submitted By Dale L. Doerr*



*WWOA Display For Job Fair*

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On January 7, 2008 as a member of the Board of Directors for WWOA, I participated in Career Connections 2008. Career Connections is a job fair sponsored by the Sheboygan County Chamber of Commerce and Sheboygan Area Businesses in cooperation with the Sheboygan Area School District. The WWOA booth was one of more than 125 booths advertising careers in health sciences, computers science, finance, manufacturing, education, etc.... The list of potential careers was endless for the 200 + high school students that attended. It was rewarding



*Dale talking to a couple high school students to meet young people who were truly interested in learning more about the wastewater profession.*

In February 2008, WWOA President Jim Thalke and I will be attending the Wisconsin Guidance Chancellor Conference in Stevens Point to get the word out about the wastewater profession.



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**Take the Bite Out of Dental Amalgam Waste**  
**April 30, 2008**  
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- University of Wisconsin Extension, Solid and Hazardous Waste Education Center
- Milwaukee Metropolitan Sewerage District
- United States Environmental Protection Agency, Great Lakes National Program Office

Sewerage systems everywhere are working to comply with stringent effluent limits for mercury. This workshop will identify and refine ideas for reducing discharges of dental amalgam, a major source of mercury for sewerage systems. Speakers will present information regarding the regulatory context, amalgam use in dentistry, the technologies and practices that reduce amalgam discharges, and regulatory case studies.

Participants will obtain:

- (1) knowledge regarding amalgam in dentistry, best management practices, and regulatory approaches;
- (2) examples of educational materials, ordinances, and reporting forms;
- (3) suggestions for outreach and measuring progress.

Program Topics Include:

- Amalgam discharge reduction issues
- Amalgam history, future and alternatives; fate in the sewage system, and best management practices
- Separator performance, ISO standards and certification
- Separator installation, maintenance & residuals
- Dental amalgam waste reduction program descriptions--- what works, what doesn't

Program fee is \$50.00. A complete agenda and on-line registration information will be available late January 2008 at <http://shwec.uwm.edu> .



*Laura Oman*

Dear Mr. Peterson,

Thank you very much for the scholarship. Please pass my gratitude on to the selection committee and all those who made the WWOA scholarship possible. As I continue on in pursuing my environmental engineering degree, the scholarship will help tremendously. I regret that I could not attend the awards banquet at the WWOA's Annual Conference in October, but as I attend Michigan Tech in Houghton MI, it's a rather long drive to La Crosse!

Thank you again for selecting me to receive this award, and if you need any further information from me, please do not hesitate to contact me.

Sincerely,

Laura Oman

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Wisconsin Wastewater Operator's Association  
2007 Operator of the Year Award  
Southeast District - October 25, 2007

Given by Jeff L. Deitsch

It is my pleasure to award the 2007 Operator of the Year Award for the Southeast Region WWOA. In preparing for this duty I thought hard about how I could gather information about this operator and how I could accomplish this without tipping him off? Should I use information that was submitted from the operator that nominated this person for the award? No, because all of you operators out there do the same thing everyday 24 hours a day, 7 days a week, 365 days a year! Should I call this operators employer and ask for information about this person? No, they couldn't keep a secret if their life depended on it and I say this only because this operator worked for this community his whole career. Then it came to me, the Southeast Region has a mission statement and that mission statement says, "Provide the tools for personal growth and encourage future leaders for our organization." As I look around this room and walking around this conference I see many operators out there that this person has given

a jumpstart in their Wastewater careers. This person has trained, shared knowledge and prepared these operators for the best job of protecting our environment. This person has over 36 years as an operator and all for the same community. He helped me get started in this business back in the early 80's. His friends call him by the name of "Muddy." Please give it up for the Southeast Operator of the Year, "Bob Manthei from the Village of Kewaskum!"

2008 Clarifier Deadlines

Issue	Submittal Due Date
April 2008	March 7
June 2008	May 9
September 2008	August 8
December 2008	November 7

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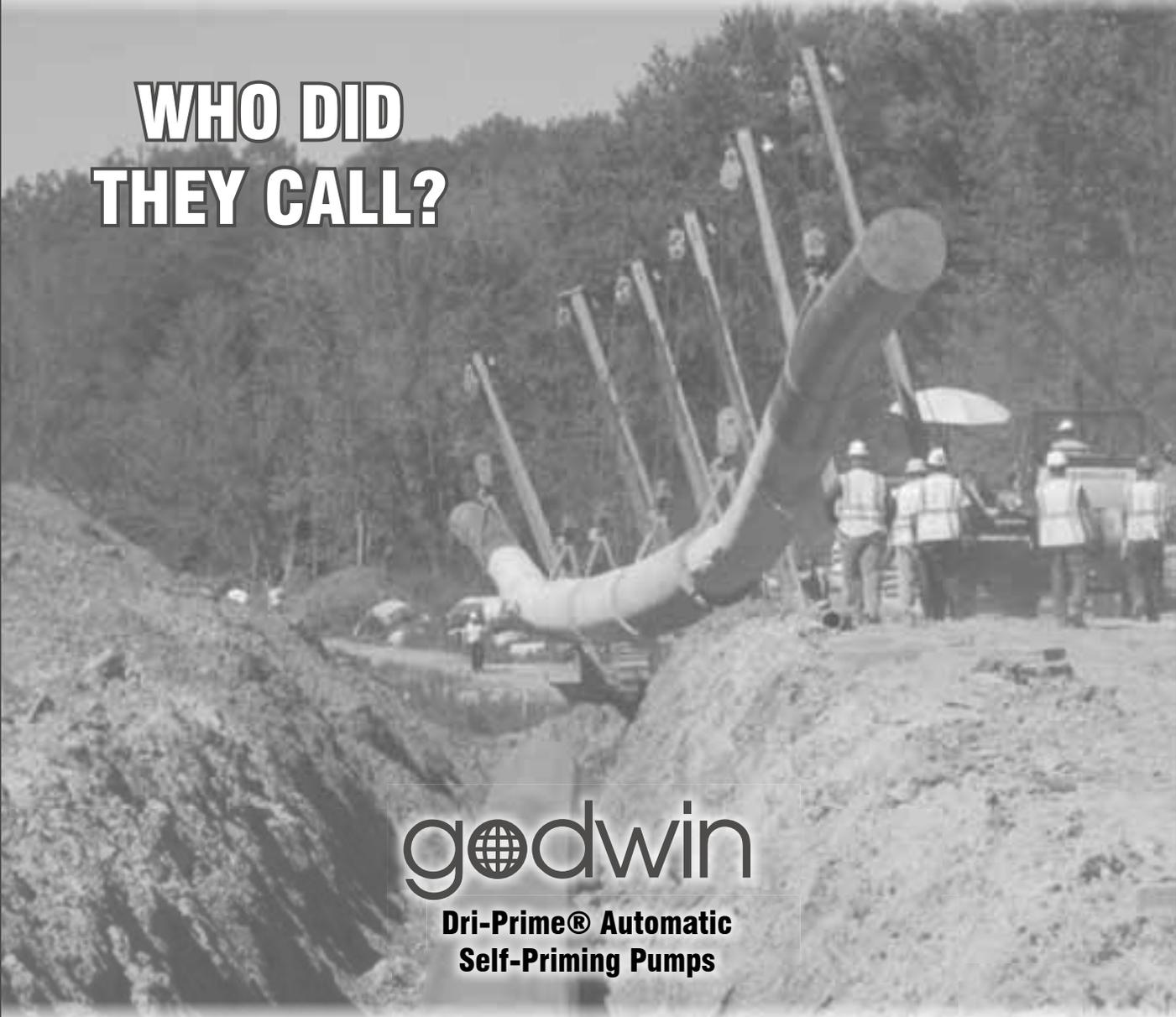
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## IN CONTROL February 2008 Successful Operations through Process Control

By Toni Glymph, Wastewater Microbiologist  
Metropolitan Water Reclamation District of Greater Chicago

### PROTOZOAN COUNTS



As the environment in the aeration basin changes one type of microorganism is dominated by another. The microorganism best suited for the environment will emerge until the environment changes again. Changes in pH, dissolved oxygen, temperature, nutrients, competition etc., all determine which species will dominate. The protozoan species that are most dominant in the treatment system indicate which conditions are most dominant. Although, protozoan species dominance should not be relied on solely, to troubleshoot wastewater treatment conditions, this information is very helpful in assessing the conditions of the activated sludge process.

This protozoan count procedure is not designed to determine the total number of each type of protozoan that is present in the system. Instead, what is important is the relative numbers of one type in comparison to another type. In other words, the purpose is to determine which species seems to be dominating. The count will examine protozoa in the following categories:

- Amoebae
- Flagellates
- Free-swimming ciliates
- Crawling ciliates
- Stalked ciliates
- Metazoa (rotifers, nematodes, water bears etc.)
- Shelled/Testate species

In a well-operating system, the ciliates will most

likely be the dominant species. Ciliates dominate when most of the nutrients have been removed from the wastewater. In a poorly operated system, amoebae and flagellates will probably dominate. Amoebae and flagellates can only compete for dominance when there are still plenty of nutrients remaining. On the other hand stalked ciliates and Metazoa will be predominant in longer age systems mainly because of their ability to compete when very little nutrients are left and their ability to feed on other protozoa.

### The Procedure

Collect a fresh, well-mixed, representative sample of mixed liquor from the discharge end of the aeration basin. If the concentration of the mixed liquor is quite high, the sample should be diluted. If you choose to dilute the sample, always use the same



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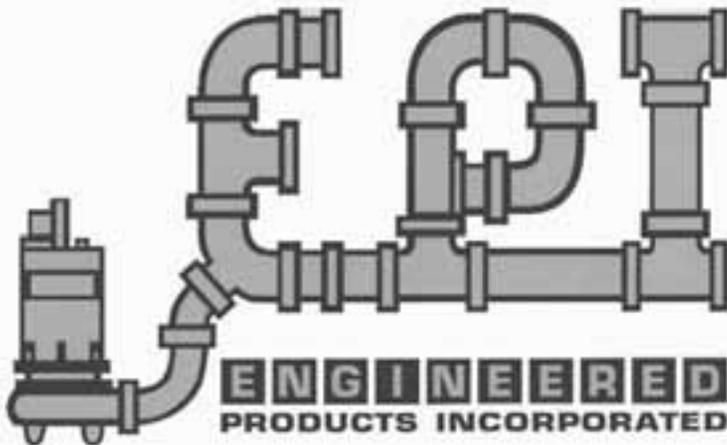
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dilution if you plan to do routine counts. Ideally, the sample should be observed under the 20X objective using the phase contrast condenser. Using a smaller objective (10X or below) will make it difficult to see the smaller flagellates and using a larger objective (40X or higher) will narrow your field of view.

1. Place one drop of mixed liquor on a clean grease-free slide and cover with a cover slip.
2. Scan the slide using 5 passes. Focus the objective at the top left corner of the cover slip. Moving down the cover slip, count and record the number of each type of protozoa that you see. This completes one pass. Move over to the right slightly and this time move up the cover slip keeping a running total the number of each type of protozoa. This will complete the second pass. Move up and down the slide until you have completed 5 passes.
3. Record the running total number of each protozoa type. Remember, if you encounter colonies of stalked ciliates you must count (or estimate) the total number of heads. The motto is, "The more heads, the older the sludge". For the best results,

scan 3 or more slides and average the number of each protozoan type.

4. Calculate relative dominance.
  - a. Count and record the total number of protozoa in each category. Record the counts from all three slides. (See example worksheet below.)
  - b. Next, calculate the average number of each organism from all three slides.
  - c. Calculate the percentage by dividing the average number of each organism by the total number of microorganisms counted and multiply by 100.
  - d. Group amoebae and flagellates together and combine the percentage. Note whether or not the amoeba are "naked" or "testate"
  - e. Group all the ciliates together and combine the percentage and calculate the percentage of Metazoa.
5. Amoebae and flagellates are grouped together because they are both indicators of young sludge or incomplete treatment. In a well-operated system, ciliates should dominate. Higher numbers of Metazoa are associated with longer sludge ages.



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6. Calculate protozoan count per milligram of mixed liquor.
7. To determine the count per mg ML, divide the protozoan count by the MLVSS.

Protozoan counts are not exact science and should not be relied on solely, for determining treatment system conditions. They are helpful however, in helping the operator to assess conditions within the aeration basin.

Example Count Worksheet:

ORGANISM	Slide #1	Slide #2	Slide #3	Avg.	%
Amoeba	6	3	1	3	4%
Flagellate	13	6	6	8	10.5%
Free-swimming Ciliates	15	12	7	11	14.5%
Crawling Ciliates	22	15	20	19	25%
Stalked Ciliates	40	32	23	32	42%
Metazoa (Rotifers, Nematodes etc.)	5	1	2	3	4%
Shelled/Testate species	0	0	0	0	0
<b>Totals</b>	101	69	59	76	

**NORTH CENTRAL REGION  
Mosinee, WI  
December 13, 2007**

Attendees: Chris Helgestad, Matt, Saloun, Ken Bloom, Lyle Lutz, Gus Strehlo, Rich Boden

Helgestad called the meeting to order at 12:10 pm. Matt Saloun, Whiting, was introduced as the newly elected Steering Committee member.

The committee appointed officers for 2008:

Regional Chair	Chris Helgestad
Regional Vice-Chair	Lyle Lutz
Regional Treasurer	Ken Bloom
Regional Secretary	Rich Boden

Ken Bloom assumed the treasurers duties from Gus Strehlo, who is the retiring steering committee member. Strehlo explained the status of all the accounts and turned over the materials and checks to Bloom.

The Committee thanked Strehlo for his many years of service.

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*Leonardo da Vinci*

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Helgestad recounted several issues discussed at the Regional Officers Meeting at the annual conference in La Crosse. The Regional Coordinator requested that officer appointments be made before the annual conference, and take effect right after the conference ends. The committee discussed several options to accomplish this, but took no action.

Helgestad explained the purpose and requirements of the non-members list. Boden will attempt to keep the non-members list current for each meeting, but explained that he has been unable to get a membership list from the state WWOA.

Helgestad discussed several ideas to expand the annual regional report. He will prepare a template and work with Boden on the report preparation. Helgestad discussed distributing information to the different WWOA entities. After some discussion it was decided to submit the information to the regional secretary who would be responsible to distribute it appropriately.

Helgestad explained discussions that took place on the website, the new Clarifier editor, and the new WWOA Library partnership with UW Madison.

The committee discussed the general structure of regional meetings and agreed to plan programs that provide six hours of credits for each meeting.

The program for the Antigo Meeting was discussed. The program will have a scada/computer theme with speakers on high and low end scada systems, data management, facility security, NR-149, and possibly safety. The committee will attempt to have credit hours apply for both water and wastewater. There is enough room for a few displays. Boden will prepare and mail the programs, Bloom will receive the registrations, handle the money, and prepare the registration list. Jim Krueger is handling the local arrangements.

The Rosholt meeting is tentatively scheduled for April 22. Planned topics include lift station upgrades and collection system reconstruction. The committee will arrange the program and handle the mailing and registration. Bob Kurszewski is handling the local arrangements.

Northern Lakes Service in Crandon will host the fall meeting, tentatively the first two weeks of August. Possible meeting locations for 2009 include NCL in Birnamwood, Whiting, and Marathon/Edgar.

Gus Strehlo reported that Operator of the Year winner John Grall would not be able to serve on the selection committee.

Saloun stated that it would be beneficial to members to have a central location for information regarding internships. He suggested an effort be made by the State Board to facilitate connecting interested communities with the appropriate representatives of educational programs that are seeking to place student interns. Ideas include posting contact information on the website.

Bloom inquired about the status of the Operator of the Year nomination form. Helgestad reported that the forms were being updated by the Regional Coordinator.

The meeting was adjourned at 1:30 pm.

Rich Boden, North Central Region Secretary



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## NEW THERMAL STANDARDS AND SURFACE WATER QUALITY CRITERIA UNDER FINAL REVIEW

By: Paul Kent and Abigail Potts

Anderson & Kent, S.C. – Municipal Environmental Group - Wastewater

### WATER QUALITY STANDARDS – NR 105

The DNR is proposing updates and additions to the surface water quality standards in NR 105 to meet federal requirements. Aquatic life criteria updates are being proposed for copper, nickel, endrin and selenium. Human health criteria updates are being proposed for: antimony, arsenic, cadmium, chlorobenzene, chromium +3, chromium +6, cyanide, 1,2-dichlorobenzene, 1,3-dichloropropene, 3,3-dichlorobenzidine, ethylbenzene, hexachlorocyclopentadiene, and toluene.

The DNR claims that the proposed criteria for copper will be the most significant change in terms of impacts on dischargers. In most state waters, the change will result in 15% more stringent criteria. Arsenic is also of particular concern to several communities because it will impose a wastewater standard more stringent than the drinking water standard in NR 809. Communities that discharge to Lake Michigan waters and have a groundwater water supply that contains high levels of arsenic may find the revised standard troublesome.

**The public comment period closes on February 16, 2008.** Comments can be submitted via U.S. mail to Mr. Jim Schmidt, Bureau of Watershed Management, P.O. Box 7921, Madison, WI 53707. Written comments may also be electronically submitted at the following internet site: <http://adminrules.wisconsin.gov>

MEG will be submitting comments, but we would encourage any affected communities to do so as well. There will also be an opportunity for public comment at the Natural Resources Board meeting when the rules are up for adoption.

### THERMAL STANDARDS – NR 102 AND 106

As we reported back in May of 2007, the municipal

exemption is being removed from the thermal standards rules. This revision was prompted by the EPA's assertion that, because thermal standards are water quality standards, there cannot be categorical exemptions to them.

The proposed rule requires the Department to establish effluent limitations for existing facilities if, either the representative daily maximum effluent temperature of the effluent is greater than 120F, or the Department determines that the effect of the heated effluent has a substantial demonstrated adverse effect on the protection and propagation of aquatic life in and on the receiving water. For all other cases, the Department is proposing a streamlined variance process. However, this variance will only be available to existing facilities. To get a variance, the POTW must certify that:



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- The temperature of their effluent is substantially similar to that of other POTWs providing similar treatment technology;
- End-of-pipe wastewater cooling technology for reduction on heat is prohibitively expensive;
- The use of equipment needed to cool wastewater effluent to meet applicable effluent temperature limitations would result in significant adverse environmental impacts when compared to the impacts caused by non-cooled domestic sewage discharges; and
- The attaining the applicable water quality standards specified in NR 102 would cause substantial and widespread adverse social and economic impacts in the applicable service area.

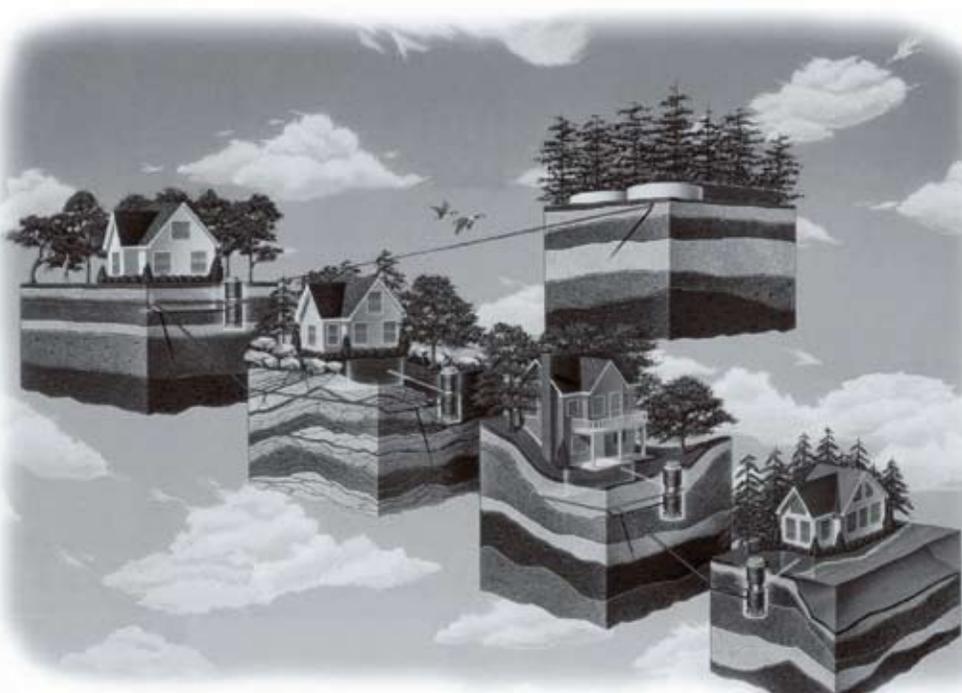
New facilities (those constructed and issued permits after the effective date of the rule) will not be eligible for the variance and will have to be designed to meet applicable water quality-based effluent temperature limitations. This raises the issue of what constitutes a “new facility.” The draft rule defines “new facility” as “any new point source facility or new point

source discharge that commences operation after the effective date of this subchapter.” See Draft NR 106.52(9). It is unclear whether an existing facility that relocates or adds an outfall will be considered a “new facility.” POTWs expecting to undertake such improvements may wish to submit public comments on this issue.

The Department received public hearing authorization at the Natural Resources Board (NRB) on December 5 and public hearings were held in January. The draft rule can be found at:

<http://dnr.wi.gov/org/nrboard/agenda/2007/December/12-07-3A3.pdf>

**Written comments will be accepted through February 28, 2008,** and can be submitted to Michael Wenzholz, Environmental Toxicologist Water Quality Standards Specialist, Bureau of Watershed Management, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921. Again MEG will be submitting comments, but we encourage affected communities to do so as well.



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## MEDICINE COLLECTION DAY



The residents of Milwaukee, Ozaukee, Racine, and Washington Counties will be able to dispose of their unused medications on April 19, 2008, from 9:00 A.M. until 1:00 P.M. Representatives of Milwaukee Metropolitan Sewerage District, West Bend Sewer Utility, Aurora Pharmacies, Veolia Environmental, County Health Departments and Law Enforcement Agencies will all be participating in this program. The purpose of Medicine Collection is to eliminate medications that are passing through our wastewater treatment plants and ending up in streams, rivers, and lakes.

Each County involved in the collection day will be responsible for the collection site and it's staffing. Drug collection and disposal will be handled by Aurora Pharmacy and Veolia Environmental Services. Security will be provided by the local law enforcement agencies.

Milwaukee Metropolitan Sewerage District and the West Bend Sewer Utility believe by partnering with other agencies and private companies together we can bring awareness of this medication issue. For further information please contact Bill Graffin at 414-225-2077 [www.mmsd.com](http://www.mmsd.com) : or Scott Tutas at 262-334-3925 [www.ci.west-bend.wi.us](http://www.ci.west-bend.wi.us)

### You Can Bring:

Prescription Medication & Over the Counter Medication. Ointments, sprays, inhalers, creams, vials and pet medications are acceptable.

### Do NOT Bring:

Illegal Drugs, Biohazardous Material, Needles/Sharps, Personal Care Products (shampoo, soaps, lotions, sunscreens, etc). Household Hazardous Waste (paint, pesticides, oil, gas)

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Miller lot by the "sausage haus"

**Washington County**  
Washington County Fair Park  
3000 Pleasant Valley Rd., West Bend

**Racine County Residents**  
Eastern Collection Site  
6200 21st Street, Racine

**Western Collection Site**  
156 E. State St., Burlington

**Ozaukee County Residents**  
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**26th Annual Spring Biosolids Symposium**  
**Tuesday, March 18, 2008**  
**Holiday Inn Hotel & Convention Center, Stevens Point, Wisconsin**

Symposium Agenda

7:15 am	Registration Opens	11:45 pm	<b>Lunch</b>
8:25 am	Welcome – <b>Bill Marten</b>	12:40 pm	Morning Panel Question & Answer – <b>Connie Wilson, Moderator</b>
8:30 am	USEPA Update – <b>Rick Stevens</b>	1:10 pm	Biosolids Land Application Program Perspectives – <b>Mike Northouse, Gus Strehlo, Wally Thom, Don Murphy</b>
9:15 am	Wis. DNR Update – <b>Judy Gottlieb &amp; Ben Benninghoff</b>	2:10 pm	<b>Break</b>
9:45 am	Pathogen Regrowth – <b>Matt Higgins</b>		<b>Dave Taylor, Moderator</b>
10:15 am	<b>Break</b> <b>Bill Marten, Moderator</b>	2:25 pm	Dane Co. Septage Regulation Initiative – <b>John Hendrick &amp; Jim Clark</b>
10:30 am	Milwaukee MSD's Biosolids PCB Experience – <b>Paul Schlecht &amp; Tom Crawford</b>	2:55 pm	UW Extension Update – <b>Dick Wolkowski</b>
11:15 am	Biosolids Sampling Protocol – <b>Sharon Long</b>	3:30 pm	Adjourn

# What's Your Back-up Plan?



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**Registration Form  
Spring Biosolids Symposium  
Tuesday, March 18, 2008**

*Pre-registration is encouraged.  
Pre-registration deadline of March 7, 2008.*

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City/State/Zip

\_\_\_\_\_  
Title

\_\_\_\_\_  
Affiliation

- \_\_\_\_\_ \$55 Pre-registration
- \_\_\_\_\_ \$70 On-site Registration
- \_\_\_\_\_ \$15 Student Registration

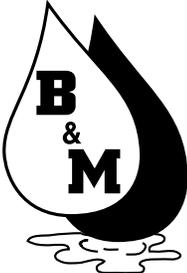
Total Amount Enclosed \$ \_\_\_\_\_

**Payment must accompany registration form.  
Complete a separate registration form for each participant.**

Make checks payable to: **WVOA**

Mail to: Rich McKee, WVOA  
5745 Mahocker Road  
Mazomanie, WI 53560  
Cell 608-513-9362  
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## 26th Annual Spring Biosolids Symposium General Information

**Symposium Date:**

Tuesday, March 18, 2008

**For more information contact:**

Rich Boden at 715-345-5259

**To Enroll: Pre-registration is encouraged!**

**Deadline Friday, March 7, 2008**

Enrollment is limited to 350!

**Fee:** \$55; make checks payable to: **WWOA**

\*\* ON SITE REGISTRATION IS \$70.00\*\*

Registration fee covers program materials, breaks, and lunch. Lodging is not included.

**Cancellations/Refunds:** In order to receive a full refund, you must cancel by contacting Rich McKee, no later than March 7, 2008. Cancellations received by phone or mail after this date will receive no refund.

**Location:**

**Holiday Inn Hotel, Convention Center  
& Water Park**

1001 Amber Avenue  
Stevens Point, WI 54481  
715-344-0200

**Lodging:** A block of rooms will be held at the Holiday Inn Hotel until Feb. 22, 2008. Make your reservations directly, 715-344-0200.

**Parking:** Ample free parking is available at the Holiday Inn Hotel Convention Ctr.

**Credits:** CEU's will be available after the last presentation; 6 credits for wastewater and septage.



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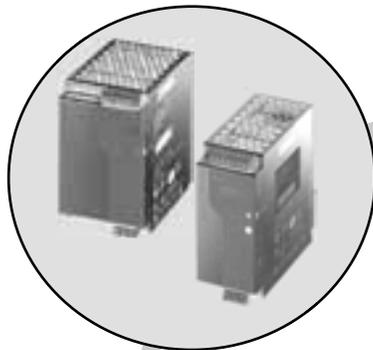
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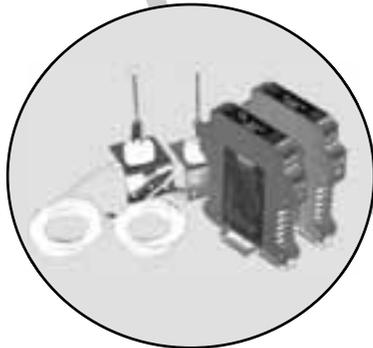
### Power Supply

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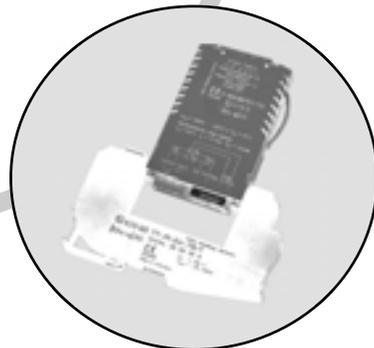
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**WWOA SE REGION MEETING  
 Bruno's Restaurant  
 730 Corner Stone Crossing  
 Waterford, WI 53185  
 February 21, 2008**

**Hosted By:**

**Western Racine County  
 Sewerage District  
 Racine, WI**

**Meeting Agenda**

- 7:30 am **Registration and Breakfast, Vendor Set-up**
- 8:15 am **Welcome – Gilbert Bakke  
 WRCS D - Commission President**
- 8:30 am **Paul Treager - Applied Technologies  
 Watermain & Sewermain replacement through muck ground at Eagle Lake**
- 9:15 am **Bruce Grindeland - Starnet  
 Practical solutions to lift station safety hazards**
- 10:00 am **Break & Vendor Displays**
- 10:30 am **Business Meeting & DNR Update**
- 11:00 am **Andy Santi - HD Waterworks  
 Metering technologies - Water and Wastewater metering**
- 12:00 pm **Lunch**
- 1:00 pm **Troy Larson - Strand Associates  
 Activated sludge foam prevention and control**
- 1:45 pm **Plant Introduction,  
 Jeff Bartz - WRCS D  
 Troy Larson - Strand Associates**
- 2:00 pm **Western Racine WWTP Tour**

**Registration**

Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_  
 State \_\_\_\_\_  
 Zip \_\_\_\_\_  
 Phone \_\_\_\_\_

**Would you like to receive future WWOA meeting info via email?** \_\_\_\_\_

Email Address: \_\_\_\_\_

_____	WWOA Member	
	In advance	<b>\$18.00</b>
	At the door	<b>\$28.00</b>
_____	Non-Member	<b>\$28.00</b>

Total Amount Enclosed \$ \_\_\_\_\_

**Advance Registration fee is due on February 13, 2008.**

Please make checks payable to WWOA SE Region.  
 Mail completed form and check to:

Jeff Deitsch, SE Region Treasurer, Jackson WWTP,  
 P.O. Box 147, Mackson, WI 53037

**Directions to Bruno's Restaurant:**

- North and South-bound US-43:  
 Exit #50 - 164 south (10 miles)  
 Right on Corner Stone Crossing to Bruno's
- North and South-bound US-94  
 Exit #329 – Hwy K west (13 miles)  
 Left on Corner Stone Crossing to Bruno's  
 Bruno's on west side of road

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### 2007 Wastewater Facility Energy and Chemical Usage

#### Electrical Usage

2006

Total usage: 1,034,800 KWH  
Avg. Mo. Usage: 86,233 KWH

Total Amount Billed: \$73,848.52  
Average Mo. Bill: \$6,154.04

2007

Total Usage: 827,800 KWH  
Avg. Mo. Usage: 68,983 KWH

Total Amount Billed: \$59,351.18  
Average Mo. Bill: \$4,945.93

We reduced our electrical consumption by 207,000 KWH or 12.5%. The cost saving was \$14,497.34 or 12.4 %. We surpassed our goal of a 10% reduction in power used.

#### Natural Gas Usage

2006

Total Usage: 2560 therms  
Avg. Mo. Usage: 213.3

Total Amount Billed: \$3225.76  
Avg. Mo. Billed: \$268.81

2007

Total Usage: 2254 therms  
Avg. Mo. Usage: 187.8

Total Billed: \$2381.76  
Avg. Mo. Billed: \$198.48

We reduced the consumption of Natural gas by 306 therms or 11.4%. The cost savings were \$844 or 13.5%, we would like to see a 5% reduction of this in 2008.

#### Aluminum Sulfate Usage

(Chemical used for phosphorus reduction)

2006

Total Usage: 25,945.2 gallons  
Avg. Mo. Usage: 2162.1 gallons

Total Amount Billed: \$16,244.28  
Avg. Mo. Bill: \$1,353.69

2007

Total Usage: 23,843.7 gallons  
Avg. Mo. Usage: 1,986.9

Total Amount Billed: \$14,851.60  
Avg. Mo. Bill: \$1,237.60

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We reduced the Alum consumption by 2101.5 gallons or 11%. The cost saving was \$1,392.68 or 11%. We have a goal for 2008 to reduce this by 5% again.

**Polymer Usage**  
(Bio-Solids Processing Chemical)

2006

Total Usage: 237.71 gallons  
Avg. Mo. Usage: 19.81

2007

Total Usage: 179.28  
Avg. Mo. Usage: 14.94 gallons

We reduced the amount of polymer used by 58.43 gallons (just slightly more than one 55 gallon Barrel) this is a 13.25% reduction in chemical usage from 2006 to 2007. We also increased the amount of solids processed from 36,910 gallons to 47,389 gallons treated per 1.0 gallon of polymer used. GBT operation hours increased from 1,003.0 to 1,013.2

I do not have a cost saving analysis from the year as we switched to a different vendor. This product seems to be more efficient and is approx. \$300.00/barrel cheaper than what we previously used. We changed vendors in mid 2007. Our goal is to reduce this usage by 5% again in 2008.

**Chlorine and Sulfur Dioxide Usage**  
(Seasonal Disinfection of effluent, May1 to Oct. 1)

2006

Total Chlorine Usage: 1279 lbs.  
Total Sulfur usage: 1145 lbs.

Avg. Mo. Usage- Chlorine: 106.58 lbs.  
Avg. Mo. Usage-Sulfur: 95.42 lbs.

Total Amount Billed: \$1,020.39  
Avg. Mo. Amount: \$85.03

2007

Total Chlorine Usage: 1500 lbs.  
Total Sulfur Usage: 956 lbs.

Avg. Mo. Usage-Chlorine: 125 lbs.  
Avg. Mo. Usage-Sulfur: 79.66 lbs.

Total Amount Billed: \$1,178.43  
Avg. Mo. Amount: \$98.19

The chlorine usage increased by 11.7%, the sulfur dioxide usage decreased by 12%. The chlorine increase in usage is due to our daily average flow at the plant increasing, and plant loading. We spent 11.5% more for disinfection chemicals in 2007 vs. 2006.

Thank You,

Terry Meyer  
Wastewater Dept.

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*Registration*

**2007 WWOA Conference Pictures**



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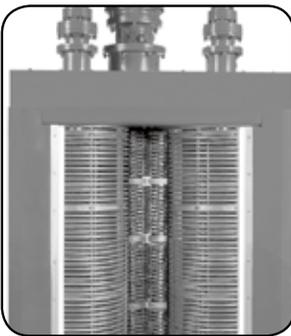


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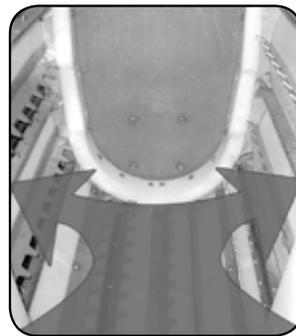
# Innovation in Wastewater Treatment

Whether you need a sewage grinder or a fine screen Peterson & Matz, Inc. will help you find the Muffin Monster grinder or fine screen right for your individual application. We build the toughest Monsters to fight your facility's worst solids, ragging and trash problems.



## Replace Comminutors

**Product:**  
Channel Monster® XD  
**Application:**  
High-flow sewage grinder  
**Benefit:**  
This headworks or pump station grinder keeps going in the toughest applications.



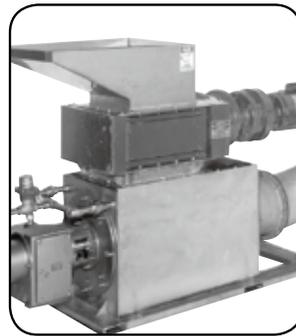
## Cleaner Headworks

**Product:**  
Bandscreen Monster™  
**Application:**  
Headworks fine screen  
**Benefit:**  
The perfect screen for Membrane Bioreactors, 2mm perforations and no carryover.



## Shred Sludge Solids

**Product:**  
Mini Monster®  
**Application:**  
Sludge grinding  
**Benefit:**  
The industry's most reliable, powerful and efficient two-shafted grinder.



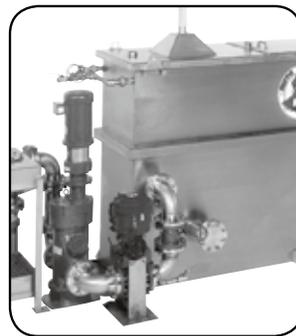
## Clean Screenings

**Product:**  
Screenings Washer Monster®  
**Application:**  
Washer-compactor  
**Benefit:**  
The cleanest, most compact screenings discharge possible.



## Protect Pumps

**Product:**  
Muffin Monster®  
**Application:**  
Pump station grinder  
**Benefit:**  
Grinds solids into particles to protect pumps from clogging with rags, rocks and trash.



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Home: 262-246-4915  
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**Randy Thater**, Director (08)  
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**Wade Peterson**, Director (09)  
West Salem Public Works  
900 West Ave, N.  
West Salem, WI 54669  
Work: 608-786-2850  
Fax: 608-786-2531  
Home: 608-7886-3329  
[wpeterson@westsalemwi.com](mailto:wpeterson@westsalemwi.com)

**Dennis Egge**, Director (09)  
Janesville WWTP  
123 E. Delavan Drive  
Janesville, WI 53546  
Work: 608-755-3121  
Fax: 608-755-3131  
Home: 608-752-4573  
[Egged@ci.janesville.wi.us](mailto:Egged@ci.janesville.wi.us)

**Dale Doerr**, Director (09)  
Sheboygan Regional WWTP  
3333 Lakeshore Drive  
Sheboygan, WI 53081  
Work: 920-459-3464  
Fax: 920-459-3463  
Cell: 920-946-2716  
[dale.doerr@sheboyganwwtp.com](mailto:dale.doerr@sheboyganwwtp.com)

**Richard McKee**, Executive Secretary  
WWOA  
24184 Fawn Meadow Lane  
Richland Center, WI 53581  
Work: 608-795-0024  
Fax: 608-795-0051  
Home: 608-513-9362  
[rdmckee@wwoa.org](mailto:rdmckee@wwoa.org)

### 2008 Convention Contacts

#### **Local Arrangements**

Kim Halverson

#### **Technical Program**

Bruce Bartel 920-438-1327

#### **Guest Program**

Eric Niffenegger

#### **Clarifier Staff**

Jean Van Sistine 920-438-1057

[jvansistine@gbmsd.org](mailto:jvansistine@gbmsd.org)

Jon Butt 414-755-1149

[jon.buttsymbiontonline.com](http://jon.buttsymbiontonline.com)

Dan Busch 920-438-1101

[dbusch@gbmsd.org](mailto:dbusch@gbmsd.org)

Jeff Haack 920-662-5111

[jeffrey.haack@dnr.state.wi.us](mailto:jeffrey.haack@dnr.state.wi.us)