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AUGUST 2013

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Excellence, **Start to Finish**

**TEAMWORK, CREATIVITY AND
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EARN RECOGNITION FOR
LODI'S WHITE SLOUGH FACILITY**

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A man with short brown hair and a beard, wearing a green short-sleeved button-down shirt, is holding a Hach LDO sensor. The sensor is a cylindrical device with a black cable attached. He is standing outdoors in front of a blurred background that appears to be a wastewater treatment facility.

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At the White Slough plant in Lodi, Calif., Karen Honer and her team consistently produce quality effluent. The plant and the collection system that feeds it have been recognized for excellence. (Photography by Lezlie Sterling)



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- Hearts and Minds: Interactive science center in Washington State
- PlantScapes: Wildlife habitat in Gastonia, N.C.
- In My Words: Waste to energy in Victor Valley, Calif.



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Are We Missing Something?

SHOULD THE FOCUS OF *TPO* EXPAND TO INCLUDE INDUSTRIAL AS WELL AS MUNICIPAL OPERATORS? WE'D LIKE TO HEAR THOUGHTS FROM PROFESSIONALS ON BOTH SIDES.

By Ted J. Rulseh, Editor



One obvious benefit of getting out of the office and into the field is seeing things from a new perspective. I had that privilege back in March when the Minnesota Pollution Control Agency invited me to speak at its annual Wastewater Operators' Conference.

I gave a keynote presentation Wednesday morning, then stayed through the following morning for the exhibit session, meeting operators from the state next door to mine and handing out copies of *TPO* and its sister publication, *Water System Operator* (*WSO*).

I was surprised (maybe I shouldn't have been) to find industrial clean-water operators very well represented among the 500 or so attendees. Most seemed already familiar with *TPO*. And that got me thinking:

Have we been ignoring a group of professionals who are already part of our readership?

Before I go on, my question to you is: Should *TPO* include at least some articles of specific interest to operators on the industrial side? We'd like your honest viewpoints no matter which side of the fence you are on.

TWO SIDES TO 'FOCUS'

With that, a little background. When COLE Publishing started *TPO* in 2009, we decided to focus tightly on municipal plants and people. Experience (ours and other publishers') shows that the closer focus a trade magazine has, the more likely it is to succeed. If you try to cater to everyone, you can dilute your efforts and end up serving no one very well.

We reasoned (after gathering insights from a few trusted sources in the profession) that the needs and interests of municipal and industrial operators were quite different. For example, municipal operators everywhere deal with largely the same kinds of flows — some mix of residential, commercial and manufacturing wastewaters — while industrial operators face flows highly specific to their niche (be it metal finishing, meat processing, dairying, or chemical production).

Furthermore, municipal operators are by nature collaborative. They all have one goal in mind — treating wastewater efficiently and meeting a permit. It is in their interest to share information and advance the profession. They are all part of a community; they don't compete with each other and have no reason to.

Industrial operators, on the other hand, work as part of closely held and proprietary processes. They themselves may not be competitors, but their companies (if in the same industry) most likely are. Therefore, we thought, they would be far less willing and able to share information.

WHAT DO THEY SHARE?

So we asked ourselves: Since municipal and industrial operators are so different, does it make sense to create one magazine for both groups? We decided it did not, and we have written and edited *TPO* for the municipal side.

My experience at the MPCA conference caused me to question our decision. A goodly number of industrial operators were present. They seemed well integrated with the group. And after all, there's a natural coming together of municipal and industrial operators in the realm of pretreatment.

So, does that mean the two disciplines have enough in common so that *TPO* can effectively serve both without watering down its presentation? Or would industrial operators be better served by a magazine or other communication designed just for them?

TIME FOR YOUR VIEWS

We don't have enough information to answer that question — we could use some other viewpoints. So, now it's your turn. If you are a

When COLE Publishing started *TPO* in 2009, we decided to focus tightly on municipal plants and people. Was that the right decision?

municipal operator, what would you think of *TPO* carrying an article or two catering to the interests of the industrial side? Why or why not? Can you think of subjects for industrial operators that would also interest and benefit you?

If you're on the industrial side, what would you like to see in the magazine that would serve you well (understanding that we can't get into the specifics of all the many industries and processes that exist)?

If you already read *TPO* regularly, what do you get out of it? What kinds of articles do you read, and why? What topics and what concerns do you feel municipal and industrial operators have in common?

You're not limited to answering those questions — feel free to share any thoughts and insights whatsoever. Send an email to editor@tpomag.com. I promise to respond, and we will publish a collection of comments in a future issue. **tpo**

Up the Ladder

By Ted J. Rulseh

Jim Meehan's reasoning is simple: Operators who are better schooled and have higher-level licenses help a treatment plant perform more effectively.

He and the leadership team at The Rahway Valley Sewerage Authority have launched an Operator Enhancement Program that encourages operators to pursue progressively higher levels of New Jersey state licensing. Meehan, executive director, devised the program with Bob Valent, plant superintendent. Andy Sasso, operations supervisor, runs the initiative day-to-day.

"When I came here in 2010, I felt it was important that we get our people licensed," Meehan says. "We had only one or two licensed operators. Under the Operator Enhancement Program, we built into the union contract three classifications of operator — Class 1, 2 and 3.

"They have increased duties across the plant as they go up the ranks to Class 1. The ultimate spot to reach is lead operator. Those people have basically the same duties as the shift supervisors. When a shift supervisor isn't there, the lead operator takes control of the plant and is paid a \$3 an hour premium during that time."

The program also raised the one-time stipend for earning each license level (from Class S-1 to S-4) from \$500 to \$700. "They can get up to \$2,800 in stipends just for getting the licenses," Meehan says. "We also pay for the schooling, and we hold it here to make it as convenient as possible." The authority works with the state Department of Environmental Protection and the Hudson County Vocational School. Operators from other clean-water authorities are allowed to attend.

As of mid-2013, all nine plant operators had or were pursuing licenses, as were all three shift supervisors. In addition, all operators have received training toward black seal low-pressure boiler operator licenses from the state Department of Labor and Workforce Development. "We feel licensing is good for operators' personal development," says Meehan. "We also feel that well-informed operators who really understand what they're doing can only help the authority."

Licensing is also a great way to further the aims of The Fire Chief Project:

- **Raise clean-water operators to the stature of the fire chief**
- **Make kids grow up wanting to be clean-water operators**

For more on The Fire Chief Project, visit the blog at www.tpomag.com.

Send ideas for The Fire Chief Project to editor@tpomag.com



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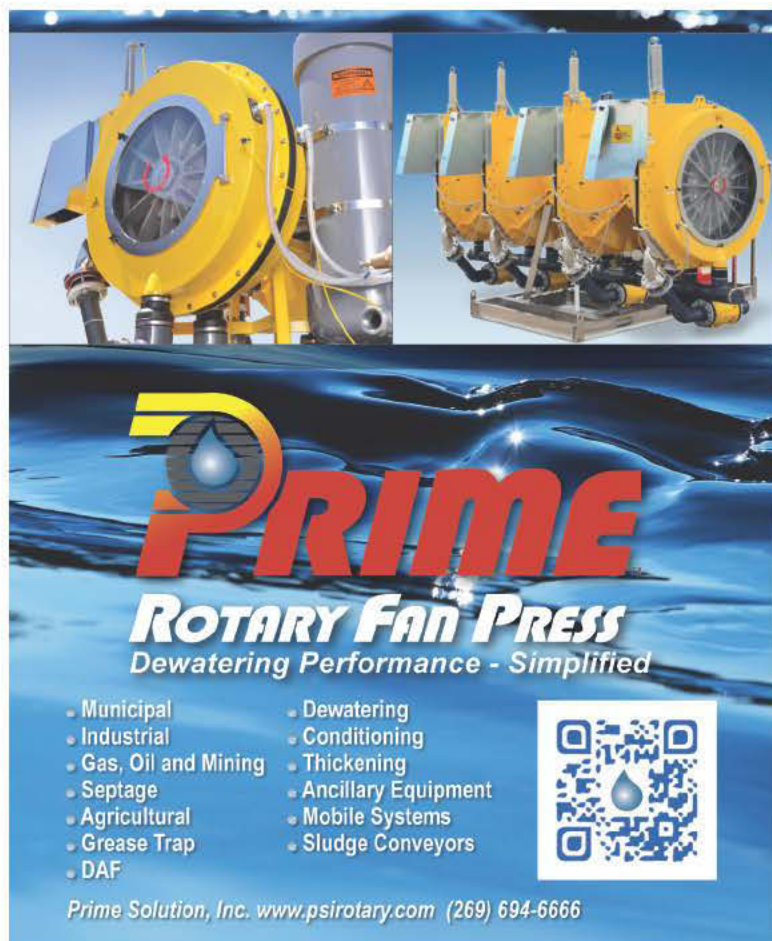
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editor's choice

Find other useful and timely information on the *TPO* website

T*P*O aims to bring you stories that help you and your plant perform better. Now we do more of the same at www.tpomag.com. There you'll find stories that appear only online — and that are current, because they're not subject to the lead times involved in the print magazine. Here are a few online exclusives recommended by the *TPO* editorial team:

DEEP BED BIOFILTRATION THE ANSWER TO VERY LOW NITRATE REQUIREMENTS

Nitrate remains a major concern for surface waters. Nitrate from fertilizers, wastewater treatment facilities and other sources can lead to hypereutrophication and hypoxia in waters, resulting in fish kills and dead zones. Today, treatment plants are looking to sand filtration for added nitrogen removal after clarification. This tertiary filtration may be the final treatment before disinfection, or a pretreatment step for an advanced process, such as microfiltration. In either case, sand filtration can reduce nitrate to well below 1 mg/L.

PROGRAM OFFERS MULTI-FACETED LEARNING WITH TRAINING LABORATORY

Mike Smith's enthusiasm for the Water Quality Management program at Red Rocks Community College is contagious. And his pride in the curriculum he's helped build is clearly justified. Located in Lakewood, Colo., the college is one of the most extensive water quality management programs in the nation with a 35-foot enclosed mobile laboratory. "There's really no other institution with anywhere near the offerings we have," says Smith, department chair, program coordinator and lead faculty. "And we have a vision to do more to expand our offerings and make our programs even more successful."

WATER TECHNOLOGY COMPANY SPONSORS 2013 BAY STATE CHILDREN'S WATER FESTIVAL

To help educate youth about water and its critical role in sustaining the earth, Xylem was a platinum level sponsor for the Bay State Children's Water Festival on June 6 at Holyoke Community College in Massachusetts. The festival was hosted by the Water Systems Council, a nonprofit organization that works to educate stakeholders, including well owners, community leaders, elected officials, and government agencies, about the importance of protecting our groundwater resources. The event gave 1,500 fifth graders hands-on exposure to water-related topics.

MODIFIED SETTLEABILITY TEST FOR ACTIVATED SLUDGE TREATMENT

One of the tried and true process control tests of the activated sludge treatment method, the settleability test, has become an operator's best friend. The 2-liter, wide-mouth container widely known as the settleometer is a piece of equipment plant operators rely on almost every day. A settleability test provides information about the settling characteristics of the biomass and the potential quality of the clarifier effluent. This article looks at the basic settleability test and sheds light on a variation called the diluted settleability test.

Check out all these stories at www.tpomag.com



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Excellence, **Start to Finish**

By Ted J. Rulseh

TEAMWORK, CREATIVITY AND CONSISTENT PERFORMANCE EARN RECOGNITION FOR LODI'S WHITE SLOUGH WATER POLLUTION CONTROL PLANT — AND ITS COLLECTION SYSTEM



The operating team at the White Slough Water Pollution Control Plant consistently produces effluent that meets stringent nitrogen limits while finding innovative ways to keep costs down. (Photography by Lezlie Sterling)

A LOT HAS CHANGED SINCE 2007 AT THE WHITE Slough Water Pollution Control Plant in Lodi, Calif. There's a new biosolids process, a new tertiary treatment process, new leadership, and a big new customer for the plant's tertiary-treated reclaim water.

One thing that hasn't changed is the operating team's commitment to excellence. Under Karen Honer, wastewater treatment superintendent, and Larry Parlin, deputy director of Public Works — Utilities, the staff consistently produces effluent that meets stringent nitrogen limits while finding innovative ways to keep costs down.

Those attributes helped White Slough win the 2012 Plant of the Year Award from the California Water Environment Association Northern San Joaquin Section in the category for medium-sized plants (5 to 20 mgd design flow). The city also won the 2012 CWEA section Collection Systems of the Year award.

Among the plant's notable accomplishments was the creation by an in-house team of a tertiary treatment bypass system that cost \$116,000 less than an engineering consultant's estimate. The system allows the plant to use tertiary filtration and UV disinfection only for the amount of flow that must meet strict Title 22 state reclaimed water standards.

"I can't say enough about the team here," says Honer, who came on board in summer 2012 with nearly 30 years' experience in the field. "They truly are a family. No one hesitates to help the other person. When someone is new, everyone is there to help them. It's very easy to lead a group like this."

DUAL COLLECTIONS

Lodi, a city of 65,000 in the northern part of California's Central Valley, lies in a wine-producing region and is also home to a variety of major industries. The city operates two collection systems — one for residential wastewater and the other for industrial flow, mainly from food processors and canneries.

Since 2007, the treatment plant has seen significant upgrades, most notably to the aeration, disinfection and solids processes, notes Parlin, who came to the city 18 months ago. Influent passes through a mechanical grit removal system (WEMCO Pump), followed by primary settling, the activated sludge process with diffused aeration and an anoxic zone for nitrogen removal (aeration diffusers by Parkson Corp.), and secondary clarification. The water then undergoes tertiary treatment in cloth media filters (Aqua-Aerobics Systems), and finally UV disinfection (TrojanUV).

profile White Slough Water Pollution Control Plant, Lodi, Calif.

BUILT:	1966 (expanded 2007)
POPULATION SERVED:	65,000
FLOWS:	8.5 mgd design, 5.0 mgd average
TREATMENT LEVEL:	Tertiary
TREATMENT PROCESS:	Activated sludge, cloth media filtration
RECEIVING STREAM:	Dredger Cut (winter); recycled (summer)
BIO SOLIDS:	Dewatered, land-applied
ANNUAL BUDGET:	\$4 million
AWARDS:	Plant of the Year and Collection System of the Year, California Water Environment Association, Northern San Joaquin Section
WEBSITE:	www.lo di.gov
GPS COORDINATES:	Latitude: 38°00'89.05" N; Longitude: 121°38'41.84" W





"I can't say enough about the team here. They truly are a family. No one hesitates to help the other person. When someone is new, everyone is there to help them."

KAREN HONER

COMMENDABLE COLLECTIONS

There are various reasons the City of Lodi won the 2012 Collection Systems of the Year award from the California WEA Northern San Joaquin Section, but Lance Roberts, utilities superintendent, thinks the best one is a data-driven focus on performance. The city has developed a performance matrix that helps in setting maintenance priorities.

This goes hand in hand with a sanitary sewer map broken into 30 districts and a cleaning schedule for each district. The goal is to clean the entire system every five to six years. "The performance matrix helps document where we need to focus the work," says Roberts. "We cross-reference the spills and blockages with our power cleaning and video inspection work. Usually we can see the correlations. By staying on the cleaning schedule and concentrating on hotspots, we've been able to reduce sanitary sewer overflows to almost to nothing."

The team also has standardized cleaning procedures, identifying the most effective nozzles and the optimum cleaning pressures and speeds, and applying step cleaning. "By making sure we all do things the same way, we've been able to increase efficiency," says Roberts. "It's about getting everybody on the same page and communicating."

In winter months (October through April), effluent not sold to reclaimed-water customers is discharged to Dredger Cut. During the rest of the year, water treated at least to secondary standards is pumped to ponds on the plant property and is used to irrigate 700 acres of land leased to local farmers for crop production.

Anaerobically digested biosolids are dewatered to about 15 percent solids in a pair of skid-mounted rotary fan presses (Prime Solution). The mate-

The White Slough team includes, front row, from left, Cristian Avila-Fuentes, Mario Guerra, Karen Honer, Ken Capitanich, Sandra Nord and Judy Leyva; second row, Brian Bock, Richard Castello, Nathan Shropshire, Lloyd Roper, Thomas Gabriel and Robert Riedinger; back row, Kelly Powers and Art Garcia.

rial is stored on a 0.65-acre covered concrete pad, where further drying occurs, and is picked up by farmers who apply it to the leased acreage, where they produce mainly corn, alfalfa and rye grass.

The biosolids process underwent a substantial change in 2012. "Before then, we ran the material through the digesters and piped it out to lagoons," says Parlin. "Then we would decant the lagoons back to the headworks, and the farmers took the liquid biosolids and applied that to the fields."

"Then our new permit called for ammonia removal. At that point we couldn't send all the solids from the decant back through the activated sludge system, because basically the ammonia loading just got too high. We had to reduce the recycle loading through the process so that we could get the proper nitrification and denitrification. That's where the dewatering came in. Of course we still get high levels of ammonia in the filtrate from the fan presses, but nowhere near the amount that was tied up in the solids from the decant."

THE RECLAIM STREAM

The majority of the plant's Title 22 reclaim water supplies cooling for a new 300 MW natural-gas-fueled electric power plant, built next to the White Slough facility by the Northern California Power Agency. The power plant uses about 1.5 mgd under a contract that brings the city at least \$1 million in annual revenue.

"They run the water through reverse osmosis treatment first," says Parlin. "There is no discharge — all that is left is the RO reject water, which is deep-well injected. Another reclaim water user is the San Joaquin Mosquito and Vector Control District. They take our water for the ponds where they raise mosquito fish [*Gambusia*], which they release into ponds and wetland areas to eat the mosquito larvae."



The biggest recent change to the plant was the addition of a tertiary treatment bypass system, largely the brainchild of Ken Capitanich, chief plant operator. "Before I started working here, Ken realized that it wasn't necessary to treat our water to Title 22 standards all the time," Honer says. "In summertime, most of our water goes to the irrigation ponds, and that only requires secondary treatment.

"Ken said, 'Let's set it up with a diversion valve so that we don't have to pay for tertiary treatment when we don't need it.' He worked with Kelly Powers, our maintenance supervisor; Nathan Shropshire, one of our mechanics; and a few other staff members. They came up with a design for a diversion valve.

"Meanwhile, we got a proposal from a consulting engineer for \$152,000 to design, build and install the system. Our staff was able to do it for less than \$40,000. It is roughly a 50-foot-long pipeline, 16 inches in diameter, with an actuating valve. Our people built it, installed it and made it work. I was in awe that they were willing and eager to take it on, because it was a major project."

Now the system is set up so that enough water is tertiary-treated to meet the power plant's demand for cooling water. "For anything above that," says Parlin, "the control valve opens and sends secondary-treated water to the storage ponds. It saves us all the cost of filtering and disinfecting that water." More recently, the in-house team took down, emptied and cleaned one of the plant's four anaerobic digesters.

ONE BIG TEAM

Such cooperation — on day-to-day work as well as special projects — is routine at White Slough. Besides those already mentioned, the plant team includes:

- Bobby Burkland, Judy Leyva and James Agnew, operator III
- Matt Rempfer, operator II
- Rochelle Helmersen, operator I
- John Flores, operator in training
- Brian Longpre, Brian Bock and Sandra Macomb, environmental compliance inspectors
- Sandra Nord and Mario Guerra, laboratory technicians
- Tommy Chocker, plant and equipment mechanic

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- Richard Castelo, maintenance worker

The lines between functions are deliberately blurred — the entire Public Works Department embraces cross-training. "Electricians who do the work at White Slough also work on traffic signals and on water wells and the water treatment plant," Parlin says. "Our plant and equipment mechanics rotate as well. They'll be here for two months, then go into town for two months, then go to the water plant for two months. It really keeps the people fresh. They're not going to the same location every day, doing the same things, and getting stagnant. They get new challenges on a regular basis."

Honer herself wears multiple hats: In addition to the plant operators, she supervises the laboratory technicians and the environmental compliance inspectors who manage the industrial pretreatment program. Before her arrival, the plant superintendent and laboratory supervisor were separate positions.

Christian Avila-Fuentes, left, operator II, and intern Robert Riedinger use a portable analyzer to measure TSS in a clarifier (Royce Technologies – a xylem brand).



White Slough Water Pollution Control Plant PERMIT AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
BOD	250 mg/L	2.0 mg/L	10 mg/L
TSS	280 mg/L	1.0 mg/L	10 mg/L
Ammonia	N/A	1.0 mg/L	1.3 mg/L
Nitrate	N/A	4.5 mg/L	10 mg/L
Coliform	N/A	<2	2.2 MPN

“At many agencies, things evolve over time, and often they evolve beyond where they should,” says Parlin. “People become specialized, and you end up creating new positions. Over the last few years, the city has gone back toward what the model was 25 or 30 years ago, where people had more duties and did more different things.

“Our lab supervisor was supervising just two lab technicians and three environmental control inspectors, and our treatment plant staff isn’t that big.

So it just made sense to combine the positions into one. We looked for somebody who had the top wastewater operator certification, management experience, and knowledge of the lab.”

“We encourage all our people to obtain certifications, from our entry-level maintenance worker positions all the way up to mechanics and operators.”

LARRY PARLIN

training through water and wastewater associations, regularly sending people to conferences and training events.

“We encourage all our people to obtain certifications, from our entry-level maintenance worker positions all the way up to mechanics and operators,” Parlin says. “I think we’re also successful because we communicate really well and really frequently about what’s going on.”

Parlin meets with the supervisory staff for one hour every two weeks and meets privately with each one for half an hour once a month. “I talk to them

every day,” he says. “I’m often out in the field, and I stop by each area at least once or twice a week just to chat with folks and find out what’s going on. I started out as an operator in training many years ago, and I remember what it’s like for people who are new and inexperienced. It’s important for them to understand that people are interested in what they’re doing.”

Honer also believes in “management by walking about,” and her observations have led her to admire the members of her team. She recalls entering a boiler room to speak with lead operator Capitanich and finding him talking with newly hired operator Helmersen. “She had only been here a couple of months,” says Honer. “Ken was explaining every detail to her — this is what this is for, and here’s how you do this. I commented on how nice it would have been to have such a hands-on supervisor when I was an OIT.”

NEXT GENERATION

Honer and Parlin recognize the importance of attracting more young people to the profession. “We have a lot of really good, long-tenured employees,” Parlin says. “Most of our supervisors could probably retire within five years. We’re conscious about bringing younger people into the entry-level positions.

“We’ll hire somebody who’s 60 if they’re the best person for the job, but in the last couple of years it seems we’ve been getting more young people into the pool of qualified candidates. I think the word is finally getting out about the opportunities available in this profession. Rochelle Helmersen was going to a junior college about 60 miles from here. She took a treatment plant tour with her environmental science class, and soon she was taking more such classes. Then she got an OIT job at a plant in the next town over, became certified, and we were fortunate to be able to hire her.”

Honer, while always on the lookout for talent, is more than satisfied with the team she now leads. “I call them the Slough Crew,” she says. “They’re great people.” **cpo**

Lab technician Sandra Nord.



TASTY CONCOCTIONS

They're serving interesting dishes in the lab at the White Slough Water Pollution Control Plant. The team there created Natalie and Martini's Café, offering a complete menu of wastewater delicacies (not actually for consumption). Karen Honer, wastewater treatment superintendent, calls it a way of injecting a little fun into what can be a routine business of analyzing water and solids samples. The first offerings grew out of banter between the lab team and operators collecting samples in the field. Lab technicians Sandra Nord and Mario Guerra started by writing "daily specials" on a whiteboard. That evolved into a full menu.

The establishment takes its name from Nord's daughter Natalie, and from Guerra, whom the Lodi public works director once mistakenly called Martin. "It's a combination of silly humor and reality," says Honer. "You know what's going on just by the innuendos and the goofiness of menu that's created. It doesn't happen every day. They might get four or five items in one day and then go a week without anything new."

Larry Parlin, deputy director of Public Works — Utilities, calls the café "a light-hearted thing" that helps keep the team loose. "If you work at a wastewater treatment plant, you have a certain sense of humor that other people sometimes don't understand," he says. "It's a way to keep people interested and creative."

The café dishes include:

Soups

- Corn chowder with digester dumplings
- Primary stew with corn and carrots

Salads

- Potato salad with partially digested celery, scum and grease
- Tossed greens from headworks with bar screen organic tomatoes and UV wiper vinaigrette

Entrees

- Striper from the slough with tartar sauce made from screen residue
- Daphnia sushi with organic algae wrap and pond sauce

Desserts

- Dark chocolate fan press cake
- Ice cream with primary foam and sauce from digester

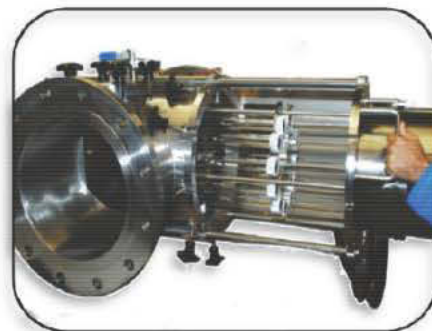
Drinks

- Double mojito shot made of locally produced mixed liquors
- Bypass margaritas with fresh-squeezed twist of orange from the tree by the headworks

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The Neuse River Wastewater Treatment Plant plans to add equipment to make biodiesel from crops grown on the 1,000-acre site.

Sunflower Power

RALEIGH LOOKS AT USING CROPS GROWN ON TREATMENT PLANT PROPERTY TO PRODUCE BIODIESEL AS FUEL FOR ON-SITE POWER GENERATORS

By Doug Day

It is the picture of a sustainable system: nourishing crops with biosolids, converting crops into biodiesel, fueling engines to power a wastewater treatment plant, creating more biosolids. Such a closed system is being used at the Neuse River Wastewater Treatment Plant in Raleigh, N.C.

"We made the decision many years ago to take advantage of such a valuable resource," says Tim Woody, superintendent for wastewater, reuse water and biosolids for Raleigh Public Utilities. After years of using its reclaimed water and biosolids to raise crops for animal feed on the facility's property, the city has received a \$100,000 grant from the Biofuels Center of North Carolina to test the potential for crop-based biodiesel.

The first planting was 27 acres of sunflowers in 2010; canola was added in 2011. The seeds from both contain oils that can be processed into biodiesel, which can be mixed with diesel fuel for the plant's engines. The first sunflower crop showed promise, providing 1,074 bushels (29,700 pounds) of oilseed. That produced 1,258 gallons of biodiesel — 46 gallons per acre. The land was irrigated but had biosolids or fertilizer applied.

The cost to plant 140 pounds of sunflower seeds, grow and harvest the crop, and transport the oilseeds to a processor in Virginia came to \$2.35 per gallon of fuel. That included 28 hours of labor, but not the cost of extracting the oils and producing

biodiesel. The processor kept enough biodiesel to cover its cost of doing that, so from the original 1,258 gallons, Raleigh got only a small percentage of biodiesel for use in city vehicles.

Still, it was enough to create interest. The Neuse River plant uses 25,000 gallons of diesel fuel per year, and replacing 10 to 20 percent of that with biofuel would help the plant's generators along with backup generators at more than 100 pump stations.

ADDING EQUIPMENT

Since the weak link was the off-site processing of the seeds, the next step is to spend about \$75,000 to install processing equipment to make biodiesel without adding personnel, Woody says. He expects that to be done in time to handle this year's harvest; there are also 5,000 bushels of seed in storage at the plant.

Woody is working with Circle Energy of Dodgeville, Wis., which specializes in biofuels equipment. "The first piece that is critical is the seed crusher," he says. "Making the biodiesel at that point is relatively easy. You don't have to do a lot to the oil. A typical recipe includes sodium hydroxide [lye], alcohol [methanol], heat, and the oil."

What crops to grow is not yet certain. Sunflowers have a large seed with good oil content. Canola has the highest oil content by volume, but the seeds are small. "Handling a seed that size is hard," Woody says. "You can't have openings or cracks in your equipment or storage bins or it all pours out."

Sunflowers are also a great attention getter: "When 50 to 100 acres of sunflowers are in full bloom, it's absolutely gorgeous. All the news agencies and media outlets pick up on the operation, and it makes



Sunflowers attract the attention of the media and the public, helping the Neuse River plant tell its clean-water story.



Farming is a full-time job for the Land Management staff at the Neuse River plant for most of the year. Along with growing crops to make biodiesel, they raise animal feed and manage biosolids land application.

BETTER BIOSOLIDS

As part of a new biosolids master plan, the 60 mgd Neuse River Wastewater Treatment Plant may add anaerobic digestion and solar biosolids drying in the near future. "We are a large facility using aerobic digestion," says Tim Woody, superintendent



for wastewater, reuse water and biosolids. "Anaerobic digestion makes better sense due to energy costs. It is obviously a large capital investment, but we see the need for anaerobic digestion for energy recovery." Five to 10 acres of solar drying for biosolids also could be added.

The plant produces Class B and Class A biosolids, but focuses on Class A because its use has fewer restrictions. "We don't need a site-specific permit and can market Class A to a larger agricultural market," Woody says. Solar drying would significantly reduce water content and cut transportation costs.

The Neuse River plant also hosts the state's first utility-scale solar power project on local government land. The public/private partnership includes a 1.25 MW photovoltaic array with 4,600 photovoltaic modules (Trina Solar) on seven acres of plant property. The solar plant went online in December 2011 at no cost to the city. NxGen Power and Southern Energy Management built, own, and operate the equipment and sell the power to Progress Energy.

After six years, the city will have the first option to buy the solar array. "It has performed very well," says Woody. "We have begun talks about possibly expanding it."

for a great story." That attention helps the plant's image and improves relations with neighbors, environmental groups, customers, regulators, and the general public.

At the same time, Woody is cautious: "We are not a research institute or a university. We are a wastewater treatment facility and that is our job. However, we also offer a real-world setting for conducting trials and considering alternatives.

"This grant gives us the opportunity to advance biodiesel commercialization and share our experiences. Part of it is to better understand all the components — how much time we are putting into it, how much equipment, herbicide, and fuel, and consider a cost-benefit analysis." It also includes sharing the findings with other municipalities through field days and training sessions.

THE FARMING ADVANTAGE

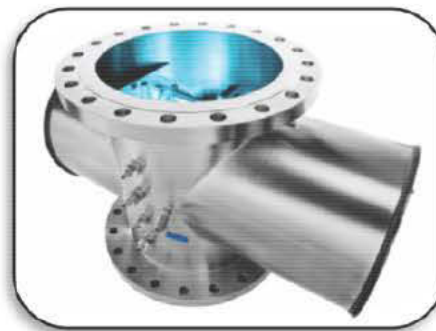
Unlike most treatment plants, the Neuse River facility has been farming some portion of the 1,000-acres site since the late '70s. The land receives biosolids and about half is irrigated with reclaimed water. Along with sunflowers and canola for biodiesel, the land grows corn, wheat, soybeans and hay, sold to granaries for animal feed.

The land management staff includes a manager, an off-site distribution coordinator, seven equipment operators, two program supervisors, and two mechanics. Farming is their full-time job from planting through harvest, and they apply about 15,000 dry tons of biosolids per year on private farm fields.

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When farming slows down, the staff members perform general site maintenance at the city's four wastewater facilities, at pump stations, and anywhere else their skills are needed. "Like many farmers, those guys are jacks of all trades, and we use them in many different settings," notes Woody.

The farming and biofuel programs fit into the city's goal of using sustainable practices. "It's a great idea," says Woody. "You grow the crop, assimilate the nutrients from biosolids, harvest the crop, make biodiesel, fuel your equipment, and do it all over again. It's a full circle." **tpo**

What's Your Story?

TPO welcomes news about environmental improvements at your facility for future articles in the Greening the Plant column. Send your ideas to editor@tpomag.com or call 877/953-3301.



Visitors can view wildlife and enjoy the wetlands on eight boardwalks that total one mile. (Photography by Jeff Smith)

Wetlands Reborn

A WATER RECLAMATION PLANT EXPANSION LEADS TO CREATION OF A WILDLIFE PARK THAT GAINS PROMINENT MENTION AS A VISITOR DESTINATION IN FLORIDA'S PANHANDLE

By Jeff Smith

When Panama City Beach officials in 1998 considered ways to divert 7 mgd of effluent from a northwest Florida estuary known as West Bay, they had no idea their solution would end up 15 years later as a recommended visitors' destination by the New York Times.

But a February 2013 edition highlighted the new outfall location — a 2,900-acre wetland and nature park named Conservation Park — in its Travel Guide section listing top spots to visit in the area, a tourist magnet in the state's Panhandle.

CLOSE COLLABORATION

"Our goal didn't include becoming a visitors' destination," says Albert Shortt, city engineer and utility director. "We had to develop a 10-year plan to expand the wastewater treatment plant to accommodate population growth and find a way to use the reclaimed water for a beneficial use."

A collaboration between the city and the Florida Departments of Environmental Protection, Fish & Wildlife, and the U.S. Corp of Engineers produced a multi-phased plan to upgrade the advanced treatment plant and create a way to rehydrate existing wetlands that had their water balance altered by many years of tree farming.

The first goal was achieved with a plant upgrade that increased capacity by 4 mgd. The second was met by using six vertical turbine pumps to transport the effluent 4.5 miles through a 36-inch pipe, to be distributed through an ecosystem that had been in decline. That's where the notable part of the Times recommendation begins: In about 2004, Panama City Beach mayor Gayle Oberst envisioned a nature park integrated with the rehydrated wetlands.

FLOW DISTRIBUTION

Effluent is received at the nature park at a manifold station in a 4,400-square-foot building disguised as a visitor pavilion, with restrooms, benches and bicycle racks. Wall displays in a 20- by 20-foot cypress-framed porch on the building describe the history and features of the park. The displays include maps of more than 24 miles of hiking and biking trails and pictures of the hidden manifold that makes rehydration possible.

"Because we are still in a start-up mode, plant operators do a lot of monitoring at the wetlands and take a lot of water samples to check for nitrogen, phosphorus, dissolved oxygen, pH and other parameters," says Shortt. An engineering firm performs biological sampling and monitoring quarterly and reports annually how the ecosystem is responding.

"Because we are still in a start-up mode, plant operators do a lot of monitoring at the wetlands and take a lot of water samples to check for nitrogen, phosphorus, dissolved oxygen, pH and other parameters."

ALBERT SHORTT

Ranging from 16- to 30-inch diameters, the four legs of the manifold system direct water to 14 strategically placed discharge structures that hydrate areas of the park on a rotating basis. Flow is regulated by plant operators who control the pumps at the plant and the valves at the manifold. From the manifold, flow through the distribution system is by gravity. Discharge is programmed according to the growing season of newly planted native spe-

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cies, like longleaf pine and hardwood trees, planted to improve the habitat and restore the wetlands.

STROLL OR PEDAL

Eight boardwalks totaling more than a mile allow park visitors to view the wildlife and wetland vegetation in otherwise inaccessible areas. Unobtrusive wayfinding signs on each of 12 hiking and biking trails complement information kiosks that describe the native plants, flowers and trees. Rest areas, picnic areas and an outdoor amphitheater-type classroom are part of the park, which officially opened in fall 2012.

Nearly 10 miles of paved trails lead to the park from three trail-heads that are part of a larger trail system planned to join those of neighboring communities. A trail-head at the treatment plant includes a parking lot and signage of the entire system, called Gayle's Trails.

"Panama City Beach's Conservation Park provides a solution to a problem and is a great benefit to the community and the Northwest Florida ecosystem," says Shortt. "And there is no doubt that the New York Times article was an unexpected bonus to increase visitor awareness of the beneficial use of reclaimed water." **tpo**

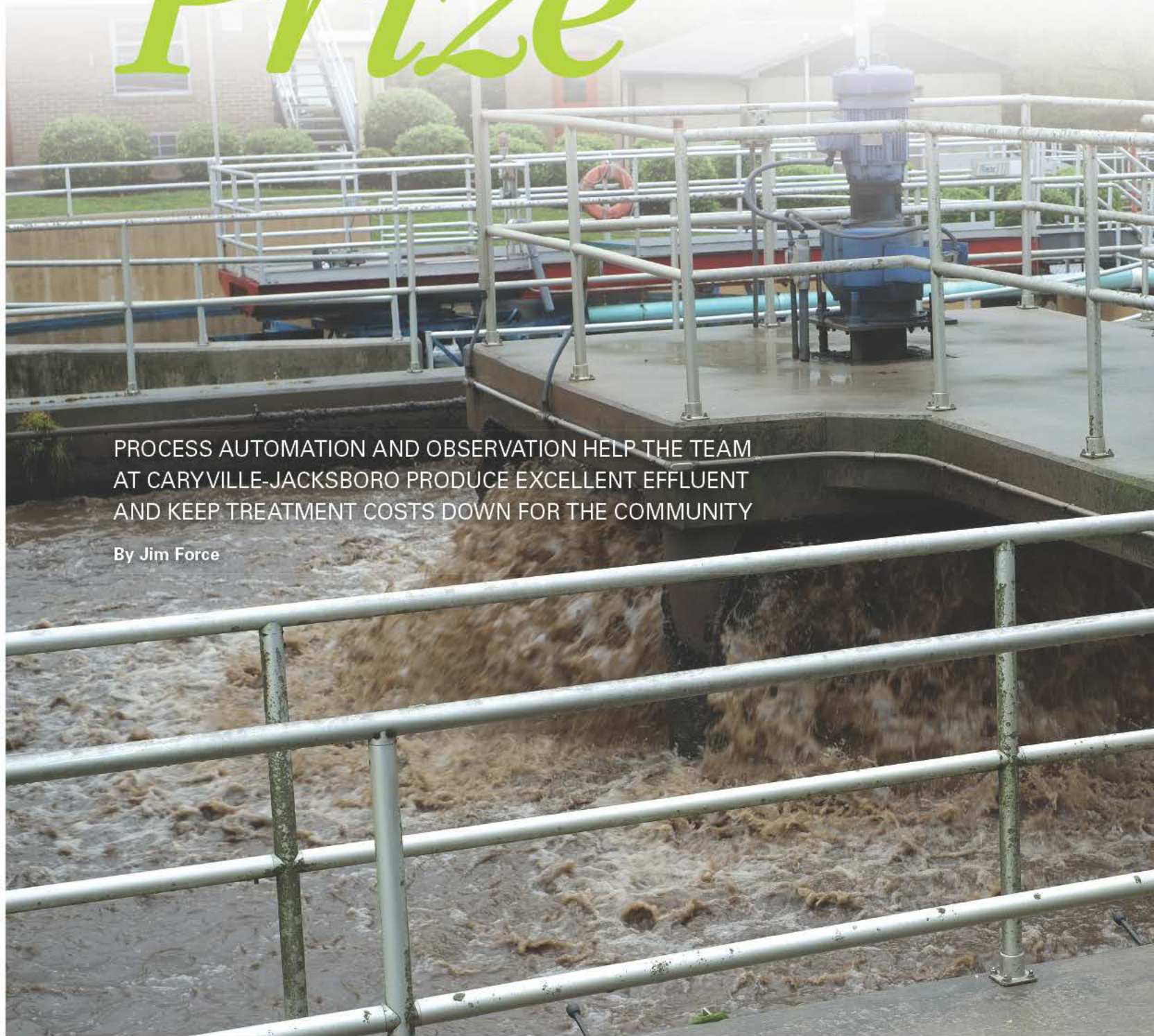


Views from around Conservation Park include an outdoor amphitheater, boardwalks and an open pavilion.

Eyes on the *Prize*

PROCESS AUTOMATION AND OBSERVATION HELP THE TEAM
AT CARYVILLE-JACKSBORO PRODUCE EXCELLENT EFFLUENT
AND KEEP TREATMENT COSTS DOWN FOR THE COMMUNITY

By Jim Force



"We have great operators — real teamwork. When we go home at night we're thinking about what we need to do tomorrow to make the plant better. Our operators protect their part of the process."

FRANK WALLACE



Frank Wallace, Caryville-Jacksboro Utilities Commission executive secretary, near the wastewater treatment facility's new aeration basin. (Photography by Chad Greene)

FRANK WALLACE MUST FEEL LIKE HE HAS A STAFF of 62 people operating his Caryville-Jacksboro Utilities Commission wastewater collection and treatment systems.

That's because the utility employs a network of technologies that track and control all 49 pump stations and provide live camera views at 13 points within the wastewater treatment plant — some 62 contact points in all.

The technology consists of a cellular-to-web SCADA system provided by Mission Communications and remote cameras from Computer Concepts of Jacksboro. Together, the systems have enabled Caryville-Jacksboro to reduce flow to its treatment works by 36 million gallons a year and cut power, labor, and maintenance costs and capital expenses some \$185,000 annually.

For its efforts, the utility received the 2012 Outstanding Leadership and Successful Achievement Award from the U.S. EPA, and an Energy Efficiency Award from the Tennessee Department of Environment and Conservation. Besides saving money, the improvements enable the Caryville-Jacksboro system to practice environmental stewardship.

The treatment plant's discharge goes to a tributary of Norris Lake, a pristine body of water in Cove Lake State Park, and the collection system surrounds the lake. "What we do is important," says Wallace, general manager and executive secretary. "We live in a fishbowl. We can't afford any bypasses or overflows or discharge violations."

HEAVILY MODERNIZED

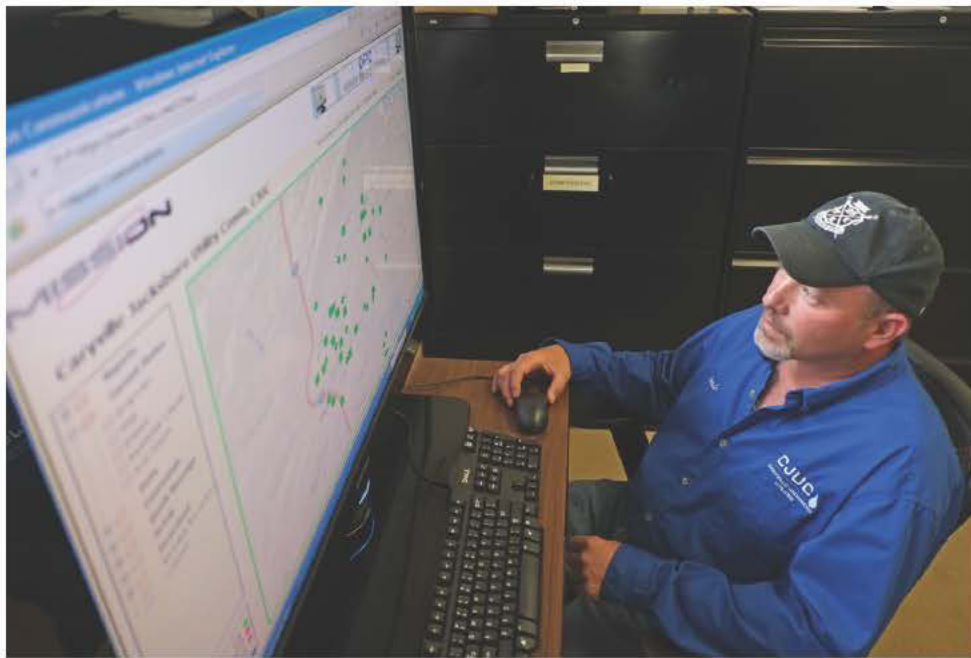
The wastewater treatment plant handles flows from a population of about 18,000 in the towns of Caryville and Jacksboro and surroundings, about 30 miles northeast of Knoxville. Wastewater has been treated at the current site since 1966, when a package treatment plant was installed. In 1987, the plant was modernized, and since then it has been upgraded to extended aeration treatment. A pretreatment program has been in place since the 1990s, and more recently the utility added the automated process control and camera systems.

profile



Caryville-Jacksboro (Tenn.) Wastewater Treatment Plant

BUILT:	1966; modernized 1987
SERVICE AREA:	Towns of Caryville and Jacksboro and surroundings
POPULATION SERVED:	18,000
FLOWS:	2.1 mgd design, 0.86 mgd average
TREATMENT LEVEL:	Secondary
TREATMENT PROCESS:	Activated sludge (extended aeration)
RECEIVING WATER:	Cove Creek, tributary of Norris Lake
BIOSOLIDS:	Dewatered, applied to grasslands
ANNUAL BUDGET:	\$1.7 million (operations)
WEBSITE:	www.jacksboro.org
GPS COORDINATES:	Latitude: 36°18'20.34" N; Longitude: 84°12'00.68" W



Jamie Wright, CMOM specialist, monitors the SCADA system (Mission Communications).

The plant's design flow is 2.1 mgd, and the average flow is 0.86 mgd. The utility is working toward an economic development grant to expand design capacity to 3.1 mgd. Influent from a 12-inch force main enters the plant through a headworks with a comminutor (Franklin-Miller) and flex rakes (Duperon) before passing to the extended aeration biological treatment process. The two 40- by 80-foot, 766,000-gallon aeration basins are divided down the center, with three mechanical surface aerators on each side.

After aeration, the flow splits between two 46-foot-diameter clarifiers (143,000 gallons each). Envirex (Siemens Water Technologies) supplied the aeration-clarification process. Clarifier overflow passes to a chlorine contact chamber, followed by dechlorination with sulfur dioxide. Final effluent cascades down an aerated spillway to Cove Creek, a tributary of Norris Lake.

Return activated sludge cycles back to the head of the system, while waste activated sludge is digested aerobically, thickened with polymer, and dewatered on a belt press (Frontier Technology) to 16 to 18 percent solids. Farmers spread the cake on grasslands, with excellent growing results. "It's a Class B biosolids," says Wallace. "We have farmers getting grass growing fence-post high after they've applied our material."

BEING NEIGHBORLY

The plant team takes extra precautions against odors. An organic chemical fed into the wastewater at outlying pump stations prevents grease buildup, and a 50 percent solution of hydrogen peroxide is injected at the two main pump stations to reduce odors. At the plant itself, a carbon filter (Calgon Carbon) downstream of the comminutor scrubs odorous gases released by the treatment process.

The plant is staffed 16 hours a day, and one operator visits periodically on weekends. All processes can be viewed on laptops each operator carries. "We have great operators — real teamwork," says Wallace. "When we go home at night we're thinking about what we need to do tomorrow to make the plant better. Our operators protect their part of the process." Team members are:

- Steve Elkins, plant operator

Staff members at the Caryville-Jacksboro Utilities Commission include, from left, Steve Russell, Frank Wallace, Jamie Wright, Rodney Wilson, Tim Sieber, Wayne Clotfelter, Greg Smith, Bob Smith, Earl Wilson, Michael Green, Jim Dial, Steve Russell, Lynn Gwin and Jordan Allen.

GETTING TO THE SOURCE

The efficiency of the Caryville-Jacksboro Wastewater Treatment Plant has benefited from an effective and user-friendly pretreatment program. All residential developments, machine shops, and industrial and commercial dischargers are monitored daily through 24-hour composite samples taken by the plant staff, and sent to a third party laboratory in Knoxville for analysis.

Frank Wallace, general manager and executive secretary of the Caryville-Jacksboro Utilities Commission, says the team is especially on guard against mercury, zinc, copper, cadmium, arsenic, nickel, silver, lead, selenium and other shock metals loadings. The commission maintains a warning system: A verbal warning comes first if discharges violate the pretreatment permit.

If the violation is not corrected, the discharger receives a written warning and finally a court order to return to compliance. Court action has been required only once. "We prosecuted and won the case, and since then there have been no issues over compliance," Wallace says. In practice, the utility prefers a more friendly approach: "We go out and help our industries stay in compliance. We stay proactive. We are here to help."



- Earl Wilson, pretreatment coordinator and dewatering operator
- Greg Smith, lab technician
- Bob Smith and Lynn Gwin, collections
- Jamie Wright, CMOM
- Wayne Clotfelter, coordinator, I&I
- Steve Russell, backup operator, I&I
- Michael Green, camera operator, I&I
- Jordan Allen, rodding machine operator, I&I
- Rodney Wilson, operator, right-of-way I&I

EYES AND EARS

The plant staff gets a big boost from the remote views of various plant processes provided by the 13 cameras installed by Computer Concepts. Outdoor cameras are located at the clarifiers, aeration basin, chlorine contact chamber, outfall, and the sludge digesters. Inside, cameras are located at the main control board and also monitor the Dulcometer chlorine controller (ProMinent), chlorine and sulfur dioxide feed rate points, and rate of return flow. They provide live remote views of these parameters, and the operators can access the views on their iPads, cell phones or laptops.

"What we do is important.

We live in a fishbowl. We can't afford any bypasses or overflows or discharge violations."

FRANK WALLACE

"The cameras, along with the computerized daily plant control program, let our operators know where they are each day and what needs to be done during the day," Wallace says. "We know the amount of sludge to be wasted, how much is in the digesters, and other values. Before, we just had to sort of get a feel for where we were, and if something was wrong, we might not see it for 25 to 30 days because we had to wait for lab results."

Computer Concepts IT specialist Jim Dial says the utility special-ordered the cameras. "They're not security cameras, although we've done security cameras for the utility," he says. "They don't provide a recorded history but simply give the plant staff an extra set of eyes to look at various operations from remote locations. It's especially helpful during storms, power outages and rain events. We're talking with the utility about putting this type of camera into the underground pump stations, so operators don't have to climb down 20 feet to inspect the pumps."

SAVING DOLLARS

Improvements in the collection system provide the lion's share of the cost-savings at Caryville-Jacksboro. Since 2007, the organization has spent more than \$5 million replacing old concrete collector lines with PVC pipe; re-routing culverts, streams, and bridges; and equipping pump stations with the SCADA system. These measures have reduced I&I and cut pumping costs.

"We have a high water table here," Wallace notes. "Our old lines were 8 to 10 inches in diameter and dated to former WPA days." Besides tightening the

Caryville-Jacksboro Wastewater Treatment Plant PERMIT AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
BOD	110 mg/L	5 mg/L	20 mg/L
TSS	112 mg/L	6 mg/L	45 mg/L
Nitrogen	22 mg/L	0.73 mg/L	1.5 mg/l summer 3.0 mg/L winter

sewers, the agency has redirected surface flows so that they don't infiltrate the collection system. All that has significantly reduced flows to the treatment plant, reducing costs and helping sustain permit compliance.

The SCADA system has cut pumping station power and maintenance costs even further. "This is a hilly area with a lot of cul-de-sacs," Wallace observes.

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Earl Wilson, pretreatment coordinator and dewatering operator, checks plant microbiology.

"We have 49 pump stations and a total of 139 pumps." Before installing the SCADA system, the utility used a crew of six workers to inspect each pump station, requiring a total of 48 man-hours per day.

"The SCADA system has been a lifesaver," Wallace says. "Within 10 to 15 seconds of a problem, we get an alert, whether it's a high wet well, or a pump that didn't come on. Now, we need just one person to check the reports every morning. We've assigned the other personnel to other responsibilities."

Wallace says the SCADA system is saving the utility over \$185,000 in operation and maintenance costs for pumps every year. "Before, we might not know about a problem until Monday or Tuesday," he says. "Now, we know immediately, and we can go out and take care of the problem."

CUTTING POWER USAGE

The system helps the utility avoid expensive pump repairs or replacements. "We have total control over our pumping stations," says Wallace. "We can see the problem and tell the pump what to do until we get there."

It is also saving energy. Before, pumps kicked on and off on their own as water levels rose and fell — as many as 250 starts and stops a day. "That increased energy costs. Our power bill was going up." Now, the starts and stops are sequenced, and no two pumps kick on at the same time. "On our own, we've reduced starts and stops to around 8 to 30 a day," Wallace says. "They come on only when it's absolutely necessary."

The same approach inside the treatment facility adds to the energy savings. Automation technology allows the plant to smooth out power consumption in its aeration blowers. "Our aerators are rated for 15 hp each," he says. "If they all come on at once, it spikes our power use to 90 hp, and we pay for electricity at a higher rate."

With the automation system in place, the aerators cycle, coming on one at a time and keeping the plant's power usage in a lower range. "Again, we're



A closed-circuit TV system helps the plant staff monitor the facilities.

only using the power we need at any one time," says Wallace. "The power company (TVA) had to do a power audit here twice because they couldn't believe how much we've reduced our electricity bill. Without our Mission Communications system, our community could not afford the cost of wastewater treatment."

STILL IMPROVING

The improvements haven't stopped at power consumption. The installation of two 4-inch flowmeters (Badger Meter) at the discharge point improved flow measurement accuracy. "At a point just above our outfall, we recycle water for non-potable use within the plant — clarifier spraying and other things," says Wallace. "It amounts to 175,000 gallons a day. We had been counting that water twice."

Now, the plant has an accurate calculation of water in and water out and can verify that it is staying below its organic loading maximum, which is based on a flow of 0.86 mgd.

It's the tale of two eras at Caryville-Jacksboro. In the old days, Wallace says, the utility might get a commissioner's order announcing that it had been sued by the state and EPA for discharge violations and would have to go to the state capital in Nashville for a show-cause hearing.

Now, the utility goes to Nashville as a poster child for energy savings and treatment efficiency.

"Caryville-Jacksboro was one of 10 utilities chosen to receive awards from the EPA and the state for participation in the energy efficiency program," Wallace says. "Some of the participants were big systems, up to 20 mgd. But when it came time to make the presentation about the program, they chose Caryville-Jacksboro to come and give it." **cpo**

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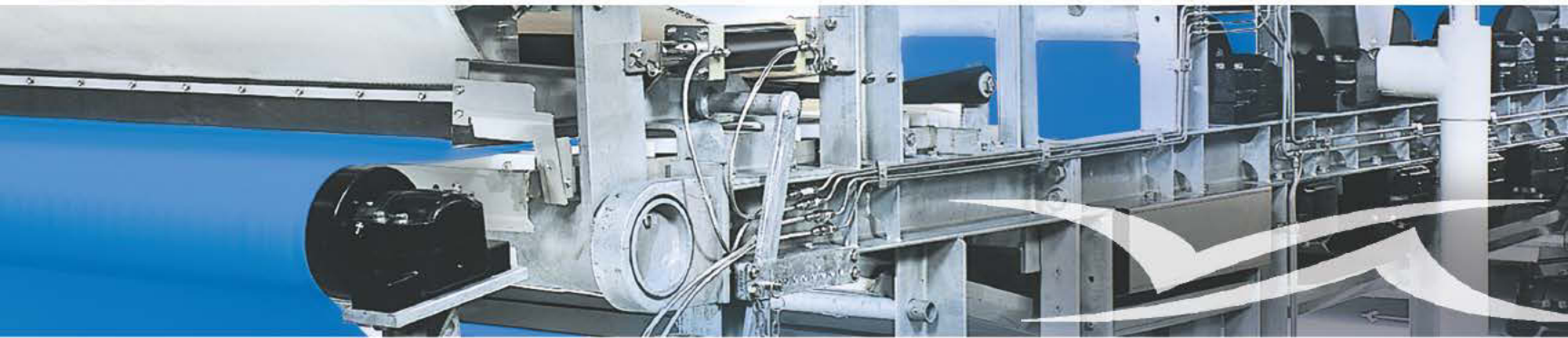
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INGENUITY AND RELIABLE EQUIPMENT HELP A NEW YORK PLANT ACCOMMODATE OUTSIDE WASTE MATERIALS AND KEEP A FLUID BED BIOSOLIDS INCINERATOR RUNNING NEAR CAPACITY

By Larry Trojak

While most wastewater treatment plants focus on material collected from their own systems, some choose — often for economic reasons — to supplement that with outside waste.

After a major expansion in the late 1980s and an upgrade in the mid-1990s, Glens Falls (N.Y.) Wastewater Treatment Plant found itself in just such a situation. Today, drawing from varied sources, the plant accepts a broad range of materials including grease trap waste, holding tank waste, septage, sewer cleaning debris and biosolids (liquid and cake) from others. That diversity and reliable long-term equipment performance have helped the plant remain viable in serving its city and surrounding areas.

LEGACY LIVES ON

Glens Falls, on the Hudson River 45 minutes north of Albany, is a picturesque city of 15,000 and has a thriving base of medical device and medical service industries. The city was home to a huge pigment manufacturing plant that closed in the 1980s, leaving contaminated soil behind. The Glens Falls treatment plant still treats wastewater from the site's groundwater treatment and collection system.

"That pigment plant was actually a driving force in an expansion that took place here in the mid-1980s," says Jason Vilander, the plant's maintenance manager. "A lot of water is used in chemical and dye work — water that couldn't simply be discharged to the river — so our plant was designed to accommodate that additional volume. The

expansion allowed us to move to activated sludge treatment and prompted installation of a fluid bed biosolids incinerator. Unfortunately, the pigment plant shut down during the later part of our expansion, leaving us with a good deal of extra capacity."

FILLING THE VOID

Needing to fill that capacity, Glens Falls began seeking entities looking to outsource water and waste treatment. Today, the plant takes in material from the Town of Queensbury, the Village of South Glens Falls with its Moreau Industrial Park, and a number of businesses.

"We've had success in some unlikely places," Vilander says. "Most of our liquid sludge, for example, comes from Vermont." That includes large ski resorts, and town and village treatment plants



The power pack for the plant's Schwing sludge pumps.



The plant's 11.5-foot-diameter fluid bed biosolids incinerator.



Jason Vilander, Glens Falls treatment plant maintenance manager.

PHOTOS COURTESY OF GLENS FALLS WASTEWATER TREATMENT PLANT

that lack drying beds or digesters for biosolids processing. "We provide that last step for them," Vilander says. Material also comes from regional correctional facilities.

"Those facilities have their own wastewater treatment systems, complete with belt presses, but that's as far as they can go with it. So, twice or three times a week, they send us five tons of cake in a single-axle dump truck, and dump it onto a pad. We load that into a receiving station and store it until we have the time and manpower to incinerate it."



The plant's 2 meter belt press.

LONG-LASTING EQUIPMENT

The benefits of importing material would be moot if the city couldn't effectively handle what it collects. Vilander says the equipment in many parts of the facility has shown excellent capability and longevity.

"A good case in point would be our sludge pumps," he says. "We had a pair of Schwing KSP-5 sludge pumps installed during the first plant upgrade. Those pumps,

"With the old pumps, we could adjust our pressures a bit to get the speed we needed, but we couldn't get independent control of both components — the screws and the pump. Now we can, and it has made a huge difference."

JASON VILANDER

among the first Schwing made for this market, have been outstanding given what they're asked to do." They were replaced a few years ago after nearly three decades, not because of wear but because volumes had grown and the plant needed to upsize.

A pair of larger Schwing KSP-10 pumps have increased pumping capability to deal with growth in biosolids handling. The pumps take cake dewatered to about 24 to 26 percent solids and route it for incineration, where 32 tons of cake (a semi-trailer full) is reduced to 100 pounds of ash. A "slip ring," pipeline lubrication system helps move that volume — the system injects a thin film of water to reduce friction loss in the pipeline and reduce pipeline operating pressures, in some cases by more than 50 percent.

"We work so hard to get all the water out, so it seems a bit contradictory to put some back in, but because we're running these slip rings at about 20 to 30 percent of their capacity and they come on for only a matter of seconds, we are adding no more than three gallons per hour," Vilander says. "So the amount of water added is minimal, and it pales by comparison to the improvement in throughput and the fuel savings we achieve with the drier cake."

BETTER CONTROL

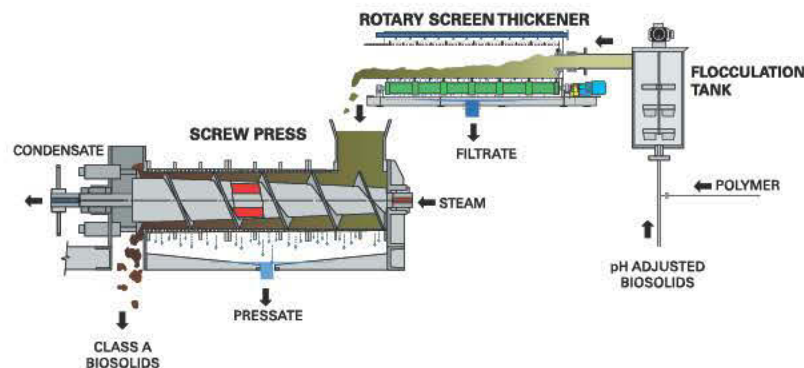
The newer pumps also add versatility: Because they are PLC-controlled, the team can run them in several modes, including pressure, tracking and manual. That means they can automatically control the speed of the hopper screws and the pumps themselves.

"With the old pumps, we could adjust our pressures a bit to get the speed we needed, but we couldn't get independent control of both components — the screws and the pump," says Vilander. "Now we can, and it has made a huge difference. Because the pumps run nice and slow and quiet, we're not seeing the level of maintenance we did with the old ones. I can see these outlasting those previous workhorses."

(continued)

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"The grease is now both a fuel source and a small revenue stream."

JASON VILANDER

if the cake is dry enough, it burns autogenously.

"If it's too wet or does not have enough VOC in it, we have to add Btu through an alternative heat source which in the past was fuel oil," says Vilander. "While the new belt presses gave us a much drier cake, we still had to rely on the fuel oil. As part of an overall cost savings move, we installed a two-part grease system consisting of a concentrator and a storage tank."

BETTER IN THE LONG RUN

Doing so dramatically reduced operating costs and gave area businesses a place to discard grease. Now, septage haulers pay a fee to drop off grease, which is then concentrated, thickened and burned.

"Occasionally we get a load of grease with wastewater added to it, which has to be treated differently," Vilander says. "So it goes into our storage tank where it is mixed and pumped up to our belt presses, combined with the cake, and moved using the Schwing pumps out to incineration. The grease is now both a fuel source and a small revenue stream."

Vilander believes the plant's piston-style pumps have played a major role in running the plant's solids operation and keeping the plant viable: "Our piston-style pumps were more expensive up front, but we know they will provide decades of good service. I think we've already proven that." **tpo**

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Teamwork Forged in Smoke

COOKOUTS AND TOURS HELP THE TREATMENT PLANT STAFF IN ALBERT LEA CREATE CONNECTIONS WITH OTHER DEPARTMENTS AND CITY LEADERSHIP

By Ted J. Rulseh

Clean-water plant teams often feel isolated — they work on the outskirts of town, not in visible places like the fire station, city hall, or the library.

Imagine the team at the treatment plant in Albert Lea, Minn., out in the country well beyond the city limits. Rick Ashling, plant superintendent, says even most city employees had never been to the facility — until he and his team made a special effort to start forging connections with them.

Last September, Ashling invited the entire staff from city hall to a special cookout that included plant tours led by members of the eight-person operating staff. He considers it essential not just for city employees to know what goes on at the treatment plant, but for members of all city departments to understand what other departments do.

Ashling talked with *Treatment Plant Operator* about the event at Albert Lea's 12 mgd activated sludge tertiary treatment plant, and about the importance of communicating across department lines.

tpo: How did you get the idea for this cookout for the city hall team?

Ashling: Our wastewater treatment plant is five miles from town. Being in a remote location, it's easy for the staff to feel left out, like they're not part of the city.

Periodically, in summer, we have a cookout for our staff here. Everybody puts in two or three bucks, I'll go buy hot dogs or hamburgers and a can of beans, and we'll have a lunch for those who want to participate. Once or twice a year, I'll invite Steven Jahnke, our Public Works director, who is my boss. That way he gets the opportunity to sit down and have meal with the guys. Mike Zelenak, our human resources director, has also joined us on occasion.

"Sometimes I hear the comment, 'All you do is spend money — you're so expensive.' This way they got to see what we do that costs so much — the machinery, the computers and everything else."

RICK ASHLING

Other people in city hall found out about the cookouts and they would say, "Boy, I would like to do that." One of the billing clerks told me, "I've worked for the city for 40 years and I don't even know where the wastewater treatment plant is." And I said, "OK, let me see what I can do."

tpo: How did you go about arranging this larger cookout?

Ashling: I asked Mike Zelenak if there was any way I could do it. He talked to Chad Adams, our city manager, who said it was OK to do it, but there was no money available for it. I said, "Don't worry about that, I'll pay for it myself."

Steven Jahnke and Mike Zelenak helped me pay for the brats, buns, potato chips and pop — enough to serve about 30 people. My staff members said, "OK, we'll buy some cookies." So everybody contributed something.

tpo: How did you handle the logistics around people's work schedules?

Ashling: I invited the entire staff from city hall, which is finance, legal, the city manager's office, and engineering. We didn't take anybody away from their work. We held the cookout for two hours. People came out for their lunch hour, and then our operators would take them on tours of the plant. City council member Larry Anderson joined us.

We held the event on a Friday. It was a beautiful day, sun shining, blue skies, about 65 degrees, hardly any wind. We couldn't have asked for better weather. We had lunch in the shade on the lawn next to the administration building. Mark Haeska, one of our maintenance people, did the grilling.

Groups came out from the city and we had everything all ready for them. They would sit down and visit and enjoy their meal, and then one of the operators would take three or four of them and walk them through the plant.

tpo: How would you say the visitors reacted?

Ashling: They told me they were very impressed with the knowledge of our staff — how well they explained how the plant works. They were amazed at the amount of technology it takes to accomplish what we need to accomplish.

The accounts payable people get bills from me on a regular basis for \$30,000 or \$70,000 or \$5,000. Sometimes I hear the comment, "All you do is spend money — you're so expensive." This way they got to see what we do that costs so much — the machinery, the computers and everything else. We even had one secondary clarifier dewatered for a repair, and they were able to see the workings inside.

tpo: Was there any discomfort on anyone's part about visiting a treatment plant?

Ashling: As I was asking who would be coming out, so I could get a headcount, I told some of the women, "There might be some odors — I hope you won't be offended by that." You know what the answer was? "We change diapers — we're used to odors." The men were more concerned about it than the ladies were. That surprised me.



Rick Ashling

tpo: Why was it important for the finance people to see your facility?

Ashling: As part of their job, they take utility bill payments, so they're the ones who get the complaints: "Why is this sewer bill so high?" If they understand the money it takes to operate our facility, and the good we do, they can answer those questions more effectively. They're the first line of communication. I feel it's very important that they're knowledgeable — and not only in what this plant does, but what other departments do.

tpo: How did the members of your team like the cookout?

Ashling: They really enjoyed it. They're willing to do it again.

tpo: Have you done outreach to other departments in the city?

Ashling: We've had people from the utility department come in. They take care of the force main that comes out here. We do the health department testing for drinking water. So I've had utility people come out, and I've taken them on tours. They also didn't realize everything we do — they were just concerned about getting the water to us. We're talking that possibly next summer we'll do another cook-out and invite the team from the garage — streets, utilities and parks.

tpo: What's the importance of making connections with those teams?

Ashling: The street department comes out and plows our roads. We store the Christmas decorations for the parks department. The recreation department, we use some of their classrooms at the city arena for safety training. It's very easy to understand what those departments do, but it would help for them to become more familiar with what we do.

It's something I would like to see expand. For example, the finance department should go see the utility department, the street department, the parks department — what they do and what kinds of equipment they have. I consider it to be team building, to know what everybody else is doing.

tpo: Do you make it a point to keep your city council members well informed?

Ashling: After elections when new people come onto the council, part of their orientation is to come here for a tour. Even if I have to stay at night to do it, I will give them a tour.

tpo: In general, do you make plant tours for the community a priority?

Ashling: Yes, but what's sad is that with the economy going down, one thing the school districts have cut out is field trips. It's a big problem. We need the elementary school kids to see what we're doing. That's the age where education starts — where they can grow up to appreciate water quality. That's also the point where you likely could get someone interested in entering this field.

tpo: What advice would you have for readers of this magazine about reaching out to other people

and departments in municipal government?

Ashling: I tell people that the wastewater treatment plant is one of the most misunderstood departments in a city. When you walk into your house and flip a switch, you have light. You turn on the faucet, you have water. You turn up the thermostat, you have heat. You turn it down, you have cool. You can see that you're getting something for your money.

But when you flush the toilet, it goes away and you don't know what happens. So people don't understand. I think team building — bringing others in and making them familiar with what you do — is the first step toward having them appreciate what you do. **tpo**

"I think team building — bringing others in and making them familiar with what you do — is the first step toward having them appreciate what you do."

RICK ASHLING



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ATTITUDE OF CARING

MIKE BISI OPERATES FROM CONCERN ABOUT HIS PROCESS, HIS TEAM,
AND THE PEOPLE IN HIS CONNECTICUT COMMUNITY WHO HAVE
SUPPORTED THEIR LOCAL TREATMENT PLANT OVER THE YEARS

By Jim Force

MIKE BISI WENT TO ELEMENTARY SCHOOL NEXT TO THE GLASTONBURY (Conn.) Water Pollution Control Facility. He confesses he probably was one of the kids who held their noses when they toured the place. Today, he's in charge of the plant and proud of its outstanding compliance record, forward-looking improvements, and award-winning performance.

After nearly 40 years on the job, he observes, "I never thought I'd end up having a career at the plant, but it's been an awesome career. I have no regrets, and I wouldn't change a thing."

While Bisi is responsible for the town's solid waste in addition to the water pollution control facility, his passion is wastewater treatment. The Glastonbury plant handles about 2.2 mgd from a population of 6,000, discharging to the Connecticut River. Only about 60 percent of the town is sewered, so the plant takes in a substantial volume of septic tank waste, as well.

UPGRADED PROCESS

The treatment train was upgraded in 2010 and today includes screening in the pretreatment step, primary clarification in 65-foot circular basins, a four-phase Bardenpho biological treatment and nutrient removal process, secondary clarification, and UV disinfection before discharge. Solids are thickened and hauled as liquid to a nearby treatment plant for further processing.

The facility has won numerous awards over the years, most recently the New England Water Environment Association (NEWEA) Utility Award for Operational and Performance Excellence, presented at the group's annual conference this last January.

Awards have come Bisi's way, as well. NEWEA honored him in 1983 with its William D. Hatfield Award for outstanding performance and professionalism, and with its Clair N. Sawyer award in 2009 for outstanding service to the



Mike Bisi, superintendent, Town of Glastonbury (Conn.) Water Pollution Control Facility.
(Photography by John Marinelli)

organization. In addition, he has served in a number of director and committee leadership positions with NEWEA.

STRAIGHTFORWARD LEADER


Bisi acknowledges the honors with the same humility and appreciation he brings to everything about his profession, his colleagues, and his accomplishments. His speech is rapid-fire and confident, yet respectful and friendly.

"I started when I was 19 and just out of high school," he recalls. "I had an interest in mechanics, worked around garages, and wanted to be an auto mechanic. The new treatment plant was just starting up. They hired me for my mechanical background and I did everything. I worked in the collections system and the laboratory for a while. I was an entry-level laborer, I guess you could say. It was a good opportunity. I took whatever classes I could, and got a lot of good mentoring."

"I was fortunate. As a 20-something, I had the opportunity to shadow the people supervising me. I remember working for an extraordinarily talented fabricator/mechanic who taught me how to weld, how to be creative. When the next grade opened up, I was just there. I wasn't an expert, but the management was willing to take a chance on me."

That's how Bisi has tried to mentor those coming up behind him: "I try to provide opportunities, and to share things. I let them do their job, give them latitude to make their own decisions. Maybe I'm mellowing a bit, but if you let a person do their job, and they're good at it, it makes everybody's life a lot easier. They will make mistakes, absolutely, but that's the way we learn. We teach respect and how everybody's job affects everybody else."

Chuck Bohaboy, Glastonbury's water pollution control supervisor, has been with the town for just over a year, but recognizes Bisi's devotion to the plant staff and to the town and its citizens, as well: "He really wants what's



Mike Bisi, right, shown with Mike Chicoine, plant operator I, believes strongly in mentoring and developing the people on his team.

profile

Mike Bisi, Town of Glastonbury, Conn., Water Pollution Control Facility

POSITION:	Superintendent, Sanitation, Water Pollution Control, Solid Waste, Recycling
EXPERIENCE:	39 years
EDUCATION:	Studies in environment, public administration, engineering, management
CERTIFICATIONS:	Connecticut Class IV Operator, New England WEA Class II Collection Systems, Connecticut, Landfill/Volume Reduction
FACILITY GOALS:	Continue improving the plant, prepare for a successor

"I try to provide opportunities, and to share things. I let them do their job, give them latitude to make their own decisions. They will make mistakes, absolutely, but that's the way we learn."

MIKE BISI



Members of the Town of Glastonbury team include, from left, Chuck Bohaboy, water pollution control supervisor; John Sikorski, plant mechanic; Mike Bisi, superintendent; Greg Doyle, lab technician; Brett Aston, plant operator II; Dan Willis, plant operator I; and Mike Chicoine, plant operator I. Not shown: Dave Burr, plant operator II.

best for the plant and the town. When I first met him during the hiring process that's what I noticed — that he wants what's best for the town."

Bohaboy also confirms Bisi's management style. "He's upfront and straightforward about what he wants and what he expects. He gives you the freedom and the opportunity to better yourself. And he thanks you, even if it's just a small thing. That's appreciated."

IMPROVING QUALITY

Speaking of thank-yous, Bisi is extremely grateful to the town and its citi-

INSPIRING VISIT

Mike Bisi is passionate about the wastewater treatment profession. That attitude is no more evident than through a story he tells about a visit with the 85-year-old retiree who preceded him as superintendent at the Glastonbury treatment plant. "He now lives in Florida," Bisi relates. "I had lost touch with him, but when we were vacationing there, we were close to him, so I stopped in for a visit. I wanted to thank him for the opportunity he had given me when I was starting out. He remembered me. He knew about the upgrade we had just completed and knew I was still at the plant. We shared stories about our career paths.

"As I was leaving, he went to a bookshelf in the garage, took out a whole stack of Polaroid photos he had saved from the first plant upgrade back in the 1970s, and gave them to me." The act made a deep impression on Bisi: "It was ironic and kind of emotional. He had hired me during that first upgrade, which he managed, and now we had just completed the latest upgrade. Through all the years he kept track of what was going on, and he wanted me to have the photos."



Mike Bisi, right, with Greg Doyle, has a straightforward leadership style that his team members appreciate.

zens for the support they have given the treatment plant over the years. "If they don't read about us in the newspaper, that's fine," Bisi says. "But our people know that the treatment plant is needed."

Proudly, he notes the public referendum to pay for the \$30 million plant upgrade in 2010 passed by a margin of almost 8 to 1: "That's a clear sign of support." The upgrade improved a conventional activated sludge process to the Bardenpho process in order to comply with 2014 nitrogen limits. The existing tanks remain but have been retrofitted with new walls, baffles, and aerobic, anaerobic and anoxic zones. The system includes three trains, and Bisi's team generally runs two at a time.

"He's upfront and straightforward about what he wants and what he expects. He gives you the freedom and the opportunity to better yourself. And he thanks you, even if it's just a small thing. That's appreciated."

CHUCK BOHABOY

"Plus, the plant's moving equipment was just about worn out and needed replacement," Bisi says. UV disinfection (Ozonix) replaced the old gaseous chlorination system. A new headworks building includes a grinder (Franklin Miller) and a climber screen and screenings wash press (Vulcan). A SCADA system (Rockwell Automation) now controls all plant processes, and "has had an extraordinary impact on our energy consumption," Bisi says. Variable-frequency drives (Schneider Electric) are saving additional energy throughout the plant. Odors are controlled by a new wet scrubber and carbon system (Siemens Water Technologies).

While the upgrade improved just about everything in the plant, nitrogen was the main target. The state of Connecticut has a nitrogen credit program, charging treatment plants a fee for excessive nitrogen discharges, and providing credits when those discharges are below the limits. "We had been paying into the system, but starting last year, we have been receiving credits and getting paid back," Bisi says. Before the plant upgrade, Glastonbury was discharging up to 200 pounds of nitrogen a day. "Now, we're at 57 pounds a day — actually ahead of our schedule and the 2014 permit requirement of 98 pounds per day. We're pretty proud of that."

"In this economy, this is a secure job with competitive salaries. There are plenty of opportunities. The day is over when we could just take any employee and say, 'Send him over to the sewer department.'"

MIKE BISI

Bisi is proud as well of the community support that enabled the expenditures. "We had the support of our residents, along with our town manager and Water Pollution Control Authority, even though the project was delayed and we had to find some creative ways to finance the project," Bisi says.

The community's sewer sinking fund and capital improvement funds, plus a state grant and low-interest loan, made the upgrade possible. "Even with our debt service, we've been able to keep our rates within the lowest quartile of communities serving a population similar to ours," says Bisi. "We keep close tabs on our operating budget. We're very cognizant of what our rate payers are paying."

GETTING BETTER STILL

In other words, after all these years, Bisi still cares about his community and his profession. "I'm not ready to pack it in just yet," he says. "This is the second time around upgrading some of our pump stations, but I enjoy what I do, and I have a great staff. We're always looking for ways to make the plant more efficient. It's always been that way here. You don't check out at 3 p.m. and go home. If it's the holiday or the weekend and you're needed, you take care of business."

"With a small plant like this, it has given me the opportunity to get into computers, management — all these different things. In this economy, this is a secure job with competitive salaries. There are plenty of opportunities. The day is over when we could just take any employee and say, 'Send him over to the sewer department.' When I leave I want to be able to say I did everything I could to make our plant number one. After 40 years, it becomes part of you." **tpo**

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"There was a feeling that this couldn't happen, but we undertook our own flood planning and went ahead and moved a lot of equipment to higher locations," Bisi says. "Then we flooded the basements of some of our buildings with clean water from our hydrants."

The plant was under five feet of water, but the pre-flooding of the basements acted to offset the hydraulic pressure the flooding would have caused: "It worked to our advantage." The flood was an eye-opener for local leaders, and in 1986 the dike's height was increased by six feet.



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Team Effort

A MULTI-DISCIPLINARY GROUP PRODUCES A DIGITAL PROGRAM THAT WORKS ONLINE AND IN PRESENTATIONS, DELIVERING A POSITIVE MESSAGE FOR THE TWIN CITIES CLEAN-WATER AGENCY

By Pete Litterski

In 2002, a “Wastewater Treatment for Youngsters” digital slide show and picture book was a big step forward for the Metropolitan Council Environmental Services, harnessing the Internet to help spread an important message in the Minneapolis/St. Paul area.

Now, more than a decade later, it has become a popular and durable communications tool, thanks in great part to the team effort behind its creation. MCES operates seven wastewater treatment plants serving 2.7 million people in 106 cities, villages and townships covering 876 square miles.

MULTIPLE FUNCTIONS

Tim O'Donnell, senior information coordinator/project citizen liaison, says the slide show grew out of discussion among utility leaders on ways to share a positive message. An environmental education team was formed, drawing from wastewater operations, water resources, industrial waste, research and development, process engineering, water quality monitoring and information services.

A key team member was Gare Frick, a wastewater operator who moved on to a job as a draftsman, became a graphic designer, and has since retired. Frick produced the graphics and most of the writing for the project, which uses drawings and photos to show the treatment process. The story is told from the viewpoint of host Snowy, a great egret, and co-hosts Drake and Frogster.

The drawings clearly picture how each step of treatment works, helping students and adults under-

stand how the MCES system protects the Mississippi River. Although the slide show has received the most attention, it was not the education team's only project. The team also worked with several dozen Twin Cities agencies to establish the annual Children's Water Festival and takes part in the region's annual Earth Fest each Earth Day at the Minnesota Zoo.

USING RESOURCES

O'Donnell credits the MCES team for its broad outlook at the utility's ties to the communities it serves: “They worked on a number of projects and they looked at our approach to making information available to area schools. They asked, ‘What resources do we have available and what do others have that we can tie into?’”

Among the “others” was WaterShed Partners, a regional coalition of more than 60 public, private, and non-profit organizations. MCES made CDs and accompanying printed materials available to the coalition, sponsored by Hamline University, because it already conducted classroom programs. “That way we could extend our reach,” O'Donnell says.

The slide show was popular from the beginning and continues to attract attention from the MCES service area and around the world.

(continued)



This book is part of the MCES educational program for kids.



Gare Frick produced the graphics and most of the writing for the project.



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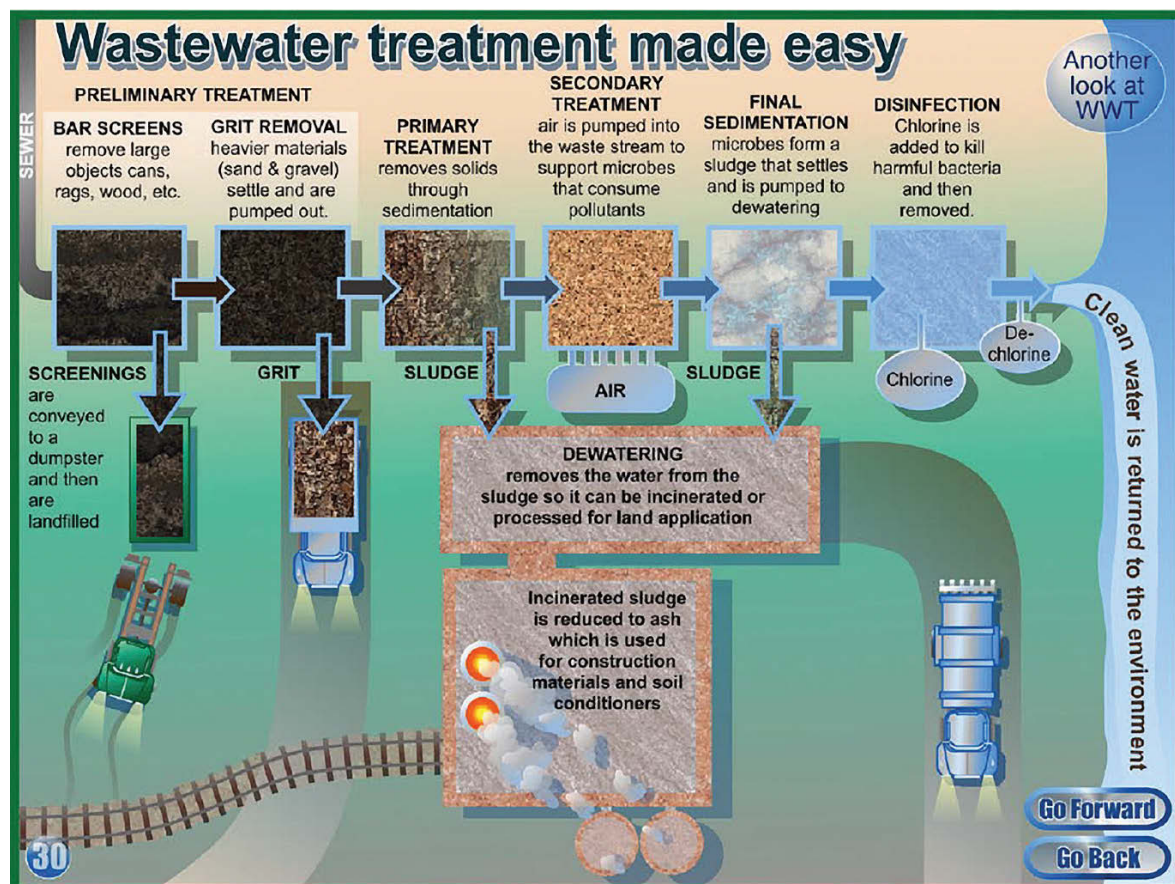
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The show gets more hits than any other feature on the MCES section of the council website.

"We got about 12,000 hits on our "Wastewater Treatment for Youngsters" page in 2012," O'Donnell says. "Many of those were probably teachers who would download the PDF and then present that to students, so it's hard to say how many people saw the presentation last year, but it's got quite a reach."

Several people on the MCES team knew how water quality was being treated in the schools and worked to include topics that teachers were talking about in their lessons. MCES has received good feedback from teachers and youth group leaders. One point made by many adults is that "they didn't realize how much they would be learning," says O'Donnell.



The program provides simplified descriptions and pictures to help kids understand the treatment process.

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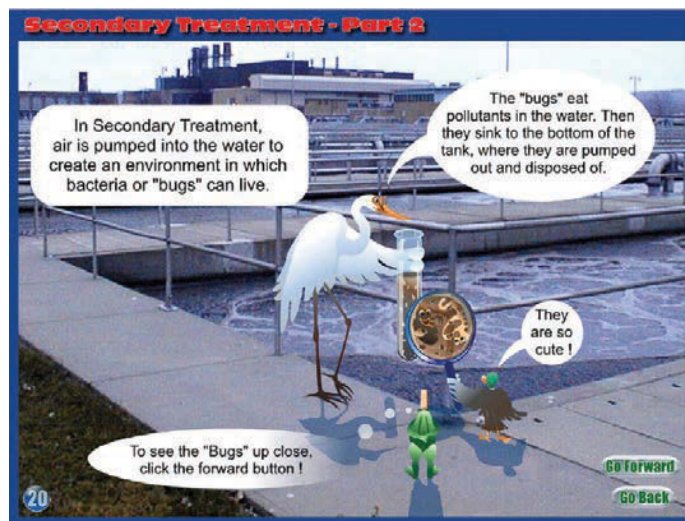
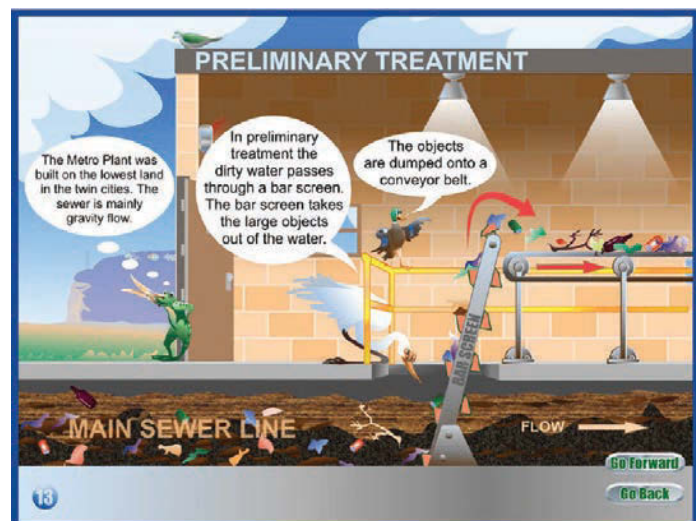
Although the presentation is more than 10 years old, "It does not easily become outdated. We've hit on something that's pretty effective and has some durability to it." Some of the information changes with the introduction of new facilities or new data. The slide show is one of four key elements in the MCES education and outreach program. The others include:

A 14-minute video produced in 2010 with the assistance of University of Minnesota student Tim Bornholdt, who worked with MCES communications specialist Bobbie Chong. The video gives the his-

tory of the utility before taking viewers through the treatment process as MCES employees explain the steps.

Traveling interactive exhibits with printed materials. MCES educators like Linda Henning take the exhibits to classrooms and community events.

Tours at four treatment plants. The tours are offered to those in the seventh grade and older. About 1,100 people per year take tours — half students and half adults. **tpo**



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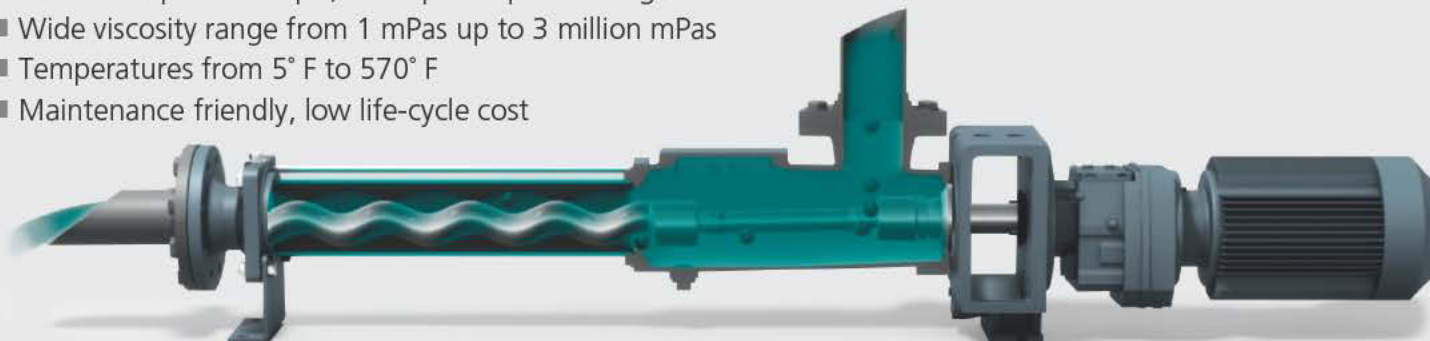


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"Sometimes I'm the manager, sometimes I'm the lab rat. I love my work. I always wanted to work in the environmental field, protecting water quality and wildlife. It's really the only job for me."

Deb LaVergne
An Original Environmentalist
LABORATORY AND PRETREATMENT MANAGER
Millbury, Mass.

Read about original environmentalists like Deb each month in *Treatment Plant Operator*.

When Will It Be Your Turn?

ALMOST EVERY ORGANIZATION HAS AN EMERGENCY SOONER OR LATER. THE BEST WAY TO MAKE SURE YOU SURVIVE IT INTACT IS TO PLAN FOR THE WORST — TODAY.

By Steve Frank, APR

Someone wise once said nothing ever goes wrong — until it does. The captain of the cruise ship *Carnival Triumph* probably thought nothing would go wrong with his 102,000-ton ship when he got underway from Galveston, Texas on Feb. 7 for a four-day cruise to Cozumel, Mexico.

Inspection reports by the U.S. Coast Guard on the condition of back-up generators and lifeboats raised few red flags. The same goes for the sanitation inspection report by the U.S. Centers for Disease Control and Prevention. Yet, something went wrong, and the 4,200 passengers and crew became poster children for what happens when disaster strikes. Some took it in stride. Others sued.

A fuel line ruptured, crippling the cruise ship. The ruptured line caused an engine room fire, and that caused a complete loss of power. Propulsion was lost. Toilets wouldn't flush. Elevators and air conditioning didn't work. Food service was severely restricted. The ship had to be towed to Mobile, Ala.

ARE YOU READY?

What about our utilities? Are we prepared to deal with a complete loss of power? What about a sewage spill from the collection system?

Crisis management experts say there are only two types of organizations: Those that have had a crisis, and those that will. Planning for what to do in an emergency doesn't mean you are planning for things to go wrong. It makes you a winner.

Or a former employee who comes with a gun and methodically shuts down treatment and alarm systems? Or a clogged bar screen that causes a raw sewage overflow into the receiving waters?

An emergency you are unprepared for can ruin your day. And your career. Being prepared can make you look brilliant. The basics aren't that hard. Some states require a utility to have emergency plans on hand. Colorado, for example, requires plants to submit an overall facility operating plan with a CPDS (Colorado Pollutant Discharge System) permit renewal request.

If a facility doesn't have an overall operating plan, it must submit a discussion or outline of the emergency response program used at the facility. That submission must include:

- A description of alternate power sources
- A discussion of alarm systems installed at the facility, including any remote transmission of alarms

- A description of the chain of command in emergencies
- Any other information needed for emergency response

The facility also must submit a copy or description of its staffing plan. The plan must include the number of operators and their certification levels, plus operating personnel coverage during weekdays, weekends and holidays.

THE SOFTER SIDE

Figuring out the operating emergencies to plan for and creating plans for them is relatively straightforward. One approach would be to think, "What's the worst thing that could happen to us? What is the likelihood of that happening?" Write it down, and then do the same thing for several other potentially disastrous events.

With the event identification done, begin to think outside the fenceline to flesh out the plan. What happens if you have a chlorine leak? That kind of event affects people both within and outside the plant. Your ability to disinfect is likely compromised, your employees' and neighbors' health may be jeopardized, and your receiving stream may be at risk.

Panic may set in among your neighbors. The media will descend upon you. Emergency response agencies, firefighters, hazardous materials handlers, and police will overrun your facility, and you will be one among many agencies involved in the situation. Questions from the media will come thick and fast. Confusion will reign.

Facilities can prepare for the non-technical requirements of handling an emergency by thinking beyond the control room. At the management level, these preparations include:

- List everyone who would be recalled to help deal with an emergency. Include physical address, desk phone, cell phone, home phone, remote location phone (such as a getaway cabin) and email.
- Develop an incident command model for emergencies. The Incident Command System is a good model for which there is much support from the federal government. You can find basic information about it at <http://www.fema.gov/incident-command-system#item1>.
- Spell out in writing who has the authority to activate the emergency response plan.

- Develop a plan to notify next-of-kin of employees who have been hurt or killed. Make sure you notify the family *first*. Do not let someone else do it.
- Sign a WARN (Water/Wastewater Agency Response Network) agreement so you can borrow people and equipment from other utilities in an emergency.
- Make sure someone on your recall list has enough spending authority to rent equipment you might need (like power generators) or hire emergency repair crews.

The next several items will help you plan to deal with the media. Depending on the seriousness of the emergency, you could have zero to hundreds of media people on hand, all demanding your immediate attention.

- Identify and appoint in writing an emergency spokesperson or public information officer (PIO), even if you don't normally have one. The PIO must not be the person who will lead the operational side of the recovery effort.
- Designate a back-up for the emergency PIO — people get sick and go on vacation.
- Get media training for the PIO and backup, plus the top two operational officials who might serve as incident managers.
- Spell out in writing who the PIO must get approval from to release information.
- Spell out in writing who will contact government officials, downstream users, the state upset hotline, and others. Develop the contact list.
- Compile a phone, cell phone, email and fax list of news media in your town and in nearby large cities. The media can help you notify stakeholders about what to do to avoid danger when lives are at risk.
- Decide where your media holding area will be. You will need chairs and tables, phones, electricity, wi-fi access, and a place to hold press briefings.
- Write a one-page fact sheet about your utility. Include the headquarters location, the area it serves, how many people are served, what the annual budget is, how many employees, amount of water or wastewater treated daily, how many miles of sewers, the last major upgrade, history, and other basics. This is much easier to do when there's no emergency.
- Conduct a tabletop exercise with operators to talk through

something like a complete loss of electrical power or other emergency. Include the communication component and local emergency management officials in the exercise.

Practice is extremely important. That's when it's OK to make a mistake and learn from it.

HAPPY ENDINGS?

All 155 passengers and crew survived when US Airways Flight 1549 ditched, without power, in the Hudson River in January 2009. They lived because Capt. Chesley B. "Sully" Sullenberger had flown thousands of hours and had practiced all types of emergencies — including dead-stick water landings — in simulators.

Sullenberger had seconds to decide whether to try for an emergency landing at Teterboro in New Jersey or in the river. He did not have time to pull out the aircraft operating manual and go through long lists of operating characteristics to choose a course of action.

He knew. He knew because he had practiced, and 155 people survived because he had.

Crisis management experts say there are only two types of organizations: Those that have had a crisis, and those that will. Planning for what to do in an emergency doesn't mean you are planning for things to go wrong. It makes you a winner.

Sun Tzu, in his book, *The Art of War*, said the general who plans the most wins the battle. That's what winners do.

ABOUT THE AUTHOR

Steve Frank is retired as public information officer for the Metro Wastewater Reclamation District in Denver, Colo. He now owns SDF Communications in Arvada and is a communications consultant for water and wastewater utilities. He can be reached at sdfcomm@q.com or 303/957-7459. tpo

WHERE TO BEGIN?

There are many good sources of help for getting started with an emergency plan and receiving guidance throughout the process.

The U.S. EPA has published **"Emergency Response Plan Guidance for Small and Medium Community Water Systems to Comply with the Public Health Security and Bioterrorism Act of 2002."** Visit http://www.epa.gov/safewater/watersecurity/pubs/small_medium_ERP_guidance040704.pdf.

The EPA also has published a **large-system planning document** found at <http://www.epa.gov/watersecurity/pubs/erp-long-outline.pdf>. Both documents can be adapted to the needs of wastewater treatment facilities.

The National Environmental Training Center for Small Communities has published **"Emergency Response Planning Resources for Small Water and Wastewater Utilities."** Visit <http://www.nesc.wvu.edu/pdf/emergency/training/TRBLGN25.pdf>.

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Reptile Wrangler

By Scottie Dayton

Mike Gee enjoys being the sole operator at Marco Shores Wastewater Treatment Plant in Marco Island, Fla. He manages the 300,000 gpd facility weekdays for six hours and usually encounters no one.

That changed in May when a lawn service worker reported finding a 12 1/2-foot-long snake in a concrete valve box. Gee, who has raised and bred snakes for years, lifted the lid and identified it as a Burmese python. "They're not aggressive, but when I saw it, I realized why I hadn't seen any baby alligators, rabbits, squirrels, raccoons, or opossums lately," says Gee.

MASS ESCAPE

Pythons and other exotic snakes escaped when Hurricane Andrew destroyed several pet stores in 1992. Their populations have proliferated, and mammals declined. "They're voracious," says Gee. "Until October 2005, wildlife researchers believed alligators would keep their population under control. Then a helicopter pilot with the South Florida Natural Resources Center found a 13-foot python with a 6-foot-long alligator protruding from a hole in its midsection. Both were dead, and so was the theory."

After closing the box's metal lid, Gee notified Nancy Richie, Marco Island's environmental specialist, who called the Florida Fish and Wildlife Conservation Commission to collect the snake. Officer Felix Collazo arrived, then Chris Sparacino from the city's community affairs department.



PHOTOS COURTESY OF NANCY RICHIE

Florida Fish and Wildlife Conservation Commission officer Felix Collazo (left) steadies the snake bag as Chris Sparacino of the city's community affairs department feeds in the python. Operator Mike Gee of the Marco Shores Wastewater Treatment Plant restrains the snake's head.

"I thought I'd raise the lid, Felix would reach in and grab the snake, and that would be it," says Gee. However, the look on Collazo's face told Gee he had never seen a snake that large, let alone caught one: "I hadn't either, but we couldn't let it go."

STUBBORN SLITHERER

The snake wouldn't move until Collazo poked it with his snake hook. Then it began slithering out behind the lid into a hard-to-reach area. Gee grabbed the tail and pulled the snake into the open, where there was room to handle it. Collazo pinned its head with the hook until Gee secured it behind the head and closed its mouth with his other hand.

"The snake didn't struggle, but it was heavy," says Gee. "Chris and Felix worked the tail into the snake bag while I controlled the head. The bag was almost too small." Collazo took the snake to Rookery Bay National Estuarine Research Reserve to be euthanized and autopsied to determine its sex and what it was eating. The python, a female, weighed more than 100 pounds and was full of eggs. The reserve gave the body to the state's Department of Environmental Protection, which is studying pythons.

This is not the first time Gee has helped capture snakes. The fire department called him to exterminate a 6-foot-long Eastern diamondback rattlesnake living in the middle of a condominium complex and to remove a python in a woman's flowerpot. Meter readers from the Water Department rely on Gee to extract all sorts of snakes from meter boxes.

NOT SCARED

"I was raised on a farm in southeastern Ohio and enjoy animals and reptiles," says Gee. "I'm not afraid of snakes, but I definitely respect them, especially when they're venomous. I owned a pygmy rattlesnake until it almost bit me a couple of times. My wife told me I'd had enough fun with that one, so I turned it loose. We're down to two goldfish now." **tpo**



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Should Your Facility Accept Septage?

A WASTE TREATMENT SYMPOSIUM IN SEPTEMBER WILL GIVE SMALL-COMMUNITY CLEAN-WATER OPERATORS A CLOSE LOOK AT THE TECHNOLOGIES AND PROJECT ECONOMICS

By Jim Anderson

Clean-water operators for small municipalities that regularly accept (or are asked to accept) septage for treatment have a unique opportunity to learn about relevant pretreatment technologies.

The National Association of Wastewater Technicians (NAWT) will host the 6th Waste Treatment Symposium Sept. 25-26 at the dewatering facility operated by James Penner, AA Septic Service & Rotary Sewer Cleaning, near Indianapolis, Ind.

If your plant regularly accepts septage, this is an opportunity to meet with some 150 other individual owners and operators to view equipment and options for dealing with septage and sludge. Attendees can also see how a town and a septage treatment facility can work hand in hand to treat septage and generate a revenue stream for the treatment plant.

If you have a non-acceptance policy, or if you have concerns about the effects septage could have on your operation, you can learn from other professionals about the methods they have used to provide the treatment and the kinds of partnerships that can benefit both a community and a private septage hauler. You will be able to talk face to face with other operators who have increased revenue

outside normal operating budgets by entering partnerships with septage facilities.

The NAWT board of directors has heard about these situations from members and wants to promote septage treatment facilities and encourage partnerships between NAWT members and local communities. The Waste Treatment Symposium allows you to spend two days focused specifically on when to consider a treatment facility and how to partner up to provide treatment services.

The Waste Treatment Symposium allows you to spend two days focused specifically on when to consider a treatment facility and how to partner up to provide treatment services.

You will deal with people who have faced issues similar to yours. You'll also see in live operation the dewatering technologies that are available and talk directly with people who have used them. You will go away with a clearer picture of how your facility can operate better or establish relationships that can create a new revenue stream. There is also a special track to explore other avenues, including anaerobic digestion for energy production, biosolids composting, growing grass for energy, and others.

Classroom discussions will be held at nearby Camp Camby and will cover aspects of how to evaluate whether a septage facility is the way, what financial institutions will look for when reviewing a loan request, what the regulatory agencies will need, and how to select an engineer when the time comes to put a plan on paper.

You will learn from those already running successful facilities. Presentations will cover treatment processes, case histories, and process economics. The agenda includes a tour of an operating facility. Equipment manufacturers will be on hand so that you can explore options, weigh the pros and cons of different technologies, and see equipment operate with real septage.

Besides the educational opportunities, there will be extended coffee breaks, lunches, exhibits, and an evening reception, all providing opportunities to network with others in similar situations and get to know manufacturers and suppliers on a personal basis.

The registration cost, including a free trial NAWT membership, is \$295. For more information, visit the NAWT website at www.NAWT.org. **tpo**



The NAWT Waste Treatment Symposium gives private contractors and public agencies a hands-on look at the latest in septage treatment and handling equipment.

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Endress+Hauser launches online instrumentation training

Endress+Hauser launched its End User Academy (www.us.endress.com/eua), enabling field technicians to gain training to run plant operations safely and efficiently without spending extended time away from their regular jobs. Through its online training modules that cover theory and concepts as prerequisites, the EUA gives technicians the preparation needed to begin on site and classroom training. The online training modules offer instruction in flow, level, pressure, temperature, liquid analysis, recorders and components and solutions.

Huber Technology names sales manager

Huber Technology named Chris Hubbard Northeast region sales manager. He replaces Frank Scriver, who was promoted to sales director. He will oversee sales in the northeast United States and eastern Canada.

Rain for Rent, Portadam form partnership

Rain for Rent and Portadam have formed a partnership, offering temporary cofferdam dewatering for construction, remediation, rehabilitation, flood protection and in-water inspection.

Dow opens California manufacturing plant

Dow Water & Process Solutions, a business unit of The Dow Chemical Co., opened a manufacturing facility in Menlo Park, Calif. The plant will make Tequatic Plus fine particle filters and house a research and development department.



Pictured (from left) are Ko Ishikura, ACEC president; Gregory Morse, Sturbridge DPW director; Ian Catlow, Tighe & Bond senior project manager; Mike Becker, Tighe & Bond construction observer; Peter Piattoni, ACEC/MA Awards chair, and Shaun Suhoski, Sturbridge town administrator.

Tighe & Bond receives ACEC Gold Award

Massachusetts engineering firm Tighe & Bond received the Gold Award from the American Council of Engineering Companies of Massachusetts during its 2013 Engineering Excellence and Awards Gala. The annual competition recognizes engineering achievements that demonstrate the highest degree of merit, ingenuity, complexity and client satisfaction. Tighe & Bond was honored for its innovative \$17 million upgrade of the Town of Sturbridge's wastewater treatment facility, which featured the combined BioMag/CoMag system. The implementation of the BioMag and CoMag processes increased wastewater treatment efficiency, improved water quality and reduced costs and overall environmental impact.

Hydraulic Institute names directors, officers

The Hydraulic Institute named its officers for 2013 and new board of directors. Dean Douglas, Dover Pump Solutions Group, remains chairman of the board and Dennis Wierzbecki, Grundfos, remains HI president. New board members include Michael S. Cropper, Sulzer Pumps; John Miersma, Iwaki America; and Andrew Warrington, Peerless Pump Co. Cropper also was elected vice president, technical affairs; Miersma will remain vice president, member services; and Warrington will remain vice president, knowledge and education. Additional board members include Suellen Torregrosa, Milton Roy; Tom Grove, AESSEAL; George Harris, Hydro; Bob Hendricks, Flowserve Corp.; Rich Heppe, Nidec Motor Co.; Robert Pagano Jr., ITT-Industrial Pro-

cess; Gary Witt, Pentair; John White Jr., TACCO, and Jeff Wiemelt, Sundyne. Past president of the institute, Al Huber, Dennis Ziegler and Ken Napolitano will remain ex-officio members of the board. The institute also recognized David McKinstry, Colfax Fluid Handling, as its Lifetime Achievement Award recipient.

Thomas & Betts publishes safety catalog

Thomas & Betts published the last in a series of four safety technology catalogs. The catalog includes hazardous and emergency lighting and surge suppression products. Catalogs are available through Thomas & Betts sales representatives.



SJE-Rhombus names sales representative

SJE-Rhombus named Northeast Sales Associates to represent its product line in Upstate New York. NESA's sales team includes six outside representatives, two inside sales/service associates, a quotation manager and an office manager.

PSG names marketing, development directors

Pump Solutions Group appointed Doug Cumpston director, global segment marketing, and named Russell Sitka director of business development, Americas. Cumpston will be responsible for the development and execution of PSG's global energy market strategy. Sitka will be responsible for the coordination and execution of PSG's strategy for the regional vertical segments, including strategic program and business plan development.

Headworks International recognized for diversity

Headworks International ranked 255 on the Div500 listing of the nation's top 500 women-owned businesses by DiversityBusiness.com. The provider of municipal wastewater treatment processes and equipment also ranked 23 among the top 100 women-owned businesses in Texas, ranked 51 among the top 100 diversity-owned businesses in Texas and ranked 75 among the top 100 privately held Texas businesses.

Vogelsang names regional sales manager

Vogelsang USA, manufacturer of pumps and grinders for the municipal market, named Ron Maiorana Southwest regional sales manager. Maiorana will be responsible for Utah, Colorado, Arizona, New Mexico, Texas, Oklahoma, Arkansas, Louisiana and Mississippi.

WILO USA names director of service

WILO USA, provider of pumps and pump solutions for water management, named Ralf Peifer director of service for its new factory service center in Thomasville, Ga. He will be responsible for defining processes and procedures within the service department, assessing and auditing third-party service centers and managing sales through the service centers.



Ralf Peifer

Bio Huma Netics names director of engineering and Probiotic Solutions

Bio Huma Netics, producer of products to increase the efficiency of wastewater treatment, named Shawn Whitmer, P.E., director of engineering and Probiotic Solutions. He will manage the company's wastewater treatment product line, sales and growth.

Grundfos breaks ground on North American headquarters

Denmark-based pump manufacturer Grundfos broke ground on its North American headquarters building in Downers Grove, Ill. Pursuing LEED Silver certification for the site, the facility will feature low-flow water fixtures, Energy Star-approved office appliances, heating, ventilation and air

conditioning free of chlorofluorocarbon-based refrigerants. Up to 75 percent of construction waste will be diverted to recycling facilities, with office furniture, carpet and ceiling tiles featuring at least 20 percent recycled materials.

Penn Stainless receives ISO certification

Penn Stainless Products received ISO 9001:2008 standard certification from National Quality Assurance, U.S.A. The standard certifies the company meets specific requirements for a quality management system and demonstrates its ability to consistently provide products that meet customer and applicable statutory and regulatory requirements.

Environmental Express names president, CEO

Environmental Express named Al Jurgela president and chief executive officer. He is experienced in general management, strategic consulting, finance and operational excellence, as well as driving growth through new market development and acquisition-based strategies. Environmental Express provides laboratory products used in water, wastewater, oil and grease analysis.



Al Jurgela

Pump Systems names directors, officers

Pump Systems Matter, the 501(c)3 training subsidiary of the Hydraulic Institute, named Geoff Wickes of Emerging Technologies, Northwest Energy Efficiency Alliance, chairman of the board for 2013. Board members include Dennis Wierzbicki, Grundfos; Robert Asdal, Hydraulic Institute; Dean Douglas, Dover Pump Solutions Group; John Miersma, Iwaki America Inc.; Mick Cropper, Sulzer Pumps (USA) Inc.; Ann Garbow, Xcel Energy; and Bruce Lung, Alliance to Save Energy (non-voting member).

CH2M HILL vice president, managing director receive university recognition

Blake Jeffcoat, vice president and U.S. client sector director for CH2M's Water Business Group, was named 2013 Outstanding Civil Engineering Alumnus by Auburn University's Samuel Ginn College of Engineering. Thomas G. Searle, managing director for Canada at CH2M HILL, received the Distinguished Alumnus of the Year Award from Marquette University's College of Engineering and the Marquette University Alumni Association.

Industrial Scientific opens distribution center

Industrial Scientific opened its newly leased, 19,500-square-foot distribution center in Oakdale, Pa. The Pittsburgh-area facility supports global order fulfillment, regional manufacturing and instrument repair.



Thompson Pumps holds Pumpology School

Thompson Pump & Manufacturing Co. held its 23rd annual Pumpology School in April at its corporate facilities in Port Orange, Fla. A total of 55 attendees from 15 states and seven foreign countries took part in the three-day workshop that included training sessions for sales and service professionals. **tpo**

projects & awards

Honeywell to reduce energy costs for Puerto Rico authority

Honeywell signed an agreement to upgrade wastewater treatment plants for the Puerto Rico Aqueduct and Sewer Authority (PRASA), the largest water and wastewater utility in North America. The energy-savings program starts with \$16.3 million in improvements at treatment plants in Barceloneta and Caguas and includes installing advanced process controls, new blowers and diffusers, and other high-efficiency equipment. The work is guaranteed to save \$2.7 million in annual energy and operating costs. Honeywell will also provide ongoing service and maintenance. The enhancements are expected to cut energy use at the Barceloneta plant in half and the Caguas plant by 30 percent. PRASA will reduce its electricity consumption by 9.3 million kW hours annually and trim carbon dioxide emissions by 6,100 metric tons each year. The company is auditing five other PRASA sites to identify opportunities to save energy.

Texas district enters public-private partnership with Severn Trent Services

Horizon Regional Municipal Utility District (HRMUD) in El Paso County, Texas, chose Severn Trent Services to provide contract management, operations and maintenance services for its water and wastewater systems through a public-private partnership. The company will also provide meter reading, customer service and billing. HRMUD serves 9,100 customers. The district's water treatment plant uses reverse osmosis technology and has a Superior Water System rating with the Texas Commission on Environmental Quality. It has a treatment capacity of 8 mgd, and the wastewater treatment plant has a capacity of 3 mgd. **tpo**



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Headworks and Biosolids Management

By Craig Mandli

TRAILER-MOUNTED PRESS

The Bright Technologies 1.7-meter trailer-mounted belt filter press system with folding conveyor and operator walkways can service multiple sites. Easily transportable and quick to set up, it needs no special lifting equipment. Options include a stainless steel frame, rollers and pans. Units can be customized to particular applications. 269/793-7183; www.brightbeltpress.com.



Belt filter press system from Bright Technologies



VF-100 dry chemical feeder from Eagle Microsystems

DRY CHEMICAL FEEDER

The VF-100 dry chemical feeder from Eagle Microsystems has a rugged direct drive mechanism and accepts feed rates from 0.05 to 50 cubic feet per hour. Feed rates are accurately controlled with an electronic speed control and a mechanical design that eliminates pulleys, belts, chains, sprockets, and gears. The feeder is made of stainless steel and has a maintenance-

free design that needs no lubrication. 610/323-2250; www.eaglemicrosystems.com.

SCREW PRESS DEWATERING SKID

FKC skid-mounted dewatering systems can be set up strictly for dewatering or can also be used to heat-pasteurize biosolids while dewatering to achieve Class A product. In this process, lime is added before dewatering to raise the pH to 12 in a separate agitated tank. The liquid biosolids are then pumped with polymer to the flocculation tank on the skid. Flocculated biosolids overflow from the tank into the rotary screen thickener and are then gravity-fed into the screw press, where steam from a small boiler is injected, heating the biosolids to meet the time and temperature requirements. 360/452-9472; www.fkcscrowpress.com.



Skid-mounted dewatering systems from FKC



Sludge Mate container filters from Flo Trend Systems

CONTAINER FILTER

Sludge Mate container filters from Flo Trend Systems can dewater wastewater and water treatment plant sludge. They are available in roll-off, trailer mounted and tipping-stand-mounted styles. Capacities range from 5 to 40 cubic yards. 713/699-0152; www.flotrend.com.



Enclosed rotary press from Fournier Industries

ROTARY PRESS

The completely enclosed rotary press from Fournier Industries stops odors and can be expanded from one to six channels to accommodate increased flows. Sludge dosed with polymer passes through a variable-speed flocculator to improve settleability. It then enters a circular dewatering channel that slowly rotates and uses backpressure to dewater material through fine mesh screens on both sides of the channel. Dry cake drops to a collection bin or is conveyed away. Once dewatering is complete, the press goes through a 5-minute wash cycle. 418/423-4241; www.rotary-press.com.

SHAFTED SPIRAL COMPACTOR

The ScrewactorHD heavy-duty shafted spiral compactor from Headworks International uses robust spiral high-torque and sealed double-thrust bearings. The 5 hp motor and 3/4-inch spiral compacts inorganic solids. The low-profile conveyor/compactor is 6 feet long and 3 feet wide and can handle about 105 cubic feet per hour. It is manufactured from grade 304 or 316 stainless steel (the shafted spiral is made of alloy steel). 713/647-6667; www.headworkinternational.com.



ScrewactorHD compactor from Headworks International



High Solids Anaerobic Digestion (HiSAD) System from Infilco Degremont

ANAEROBIC DIGESTION SYSTEM

The High Solids Anaerobic Digestion (HiSAD) System from Infilco Degremont uses a two-stage process to treat material at 20 percent solids or higher without mixing, keeping operations and maintenance costs low and improving return on investment. The system is resilient to changes in feed composition. 804/756-7600; www.degremont-technologies.com.

VORTEX IMPELLER PUMP

The S4VHL 4-inch hydraulic-drive vortex impeller pump from Hydra-Tech Pumps offers 3-inch solids handling and head capabilities up to 210 feet. It is designed to handle wastewater and sewage, and will fit through a 20-inch-diameter manhole. Applications include sewer bypass into force mains and general transfer of solids-laden fluids. It is capable of flows up to 750 gpm. It can be used where electric power is hazardous or impractical, and is available in both aluminum and ductile iron versions. 570/645-3779; www.hydra-tech.com.



S4VHL vortex impeller pump from Hydra-Tech Pumps



Advanced Grit Management from Hydro International

ONLINE GRIT MANAGEMENT

The Advanced Grit Management online program from Hydro International helps enable removal of 85 to 95 percent of all grit entering a wastewater treatment plant. It helps technicians understand grit characteristics and behavior, then applies sedimentation theory and sound engineering principles to design a system. It provides a clearinghouse for science-based information to help engineers, operators and owners select the best solution. 866/615-8130; www.advancedgritmanagement.com.



Taskmaster inline grinders from Franklin Miller

INLINE TWIN SHAFT GRINDERS

Taskmaster inline grinders from Franklin Miller use a twin-shaft mechanism to quickly reduce sewage and sludge solids to fine particles in pipelines. A drop-in housing allows for removal of the working components for maintenance. One-piece cutter cartridges replace individual cutters and spacers, increasing durability and resisting cutter and spacer cracking. The units have two counter-rotating stacks that intermesh at close clearance to shear and shred solids. The output is easily processed by downstream equipment. Units are available for 4- to 24-inch pipes. 973/535-9200; www.franklinmiller.com.

ROTARY DRUM THICKENER

IFT rotary drum sludge thickeners from IPEC Consultants consist of a cylindrical drum with a progressive series of screen elements. The drum rotates on four wheels mounted on a structural housing. The smallest openings screen the influent sludge, followed by coarser elements as the sludge thickens. Sludge containing 0.5 to 3 percent solids can be thickened to 3 to 15 percent, depending on the type of sludge. 800/663-8409; www.ipecc.ca.



IFT rotary drum sludge thickeners from IPEC Consultants



Bandscreen Monster from JWC Environmental

WASTEWATER SCREEN

The Bandscreen Monster from JWC Environmental removes solids down to 2 mm and cleans screenings to reduce disposal frequency and cost. The inside-out flow captures solids such as rocks, sticks, plastics and trash on the inside loop and ensures that they never contact the downstream portion of the screen. After the traveling panels lift the solids to deck level, a wash bar system flushes them into a disposal chute. The perforated panels are available with 2, 3 or 6 mm openings. 800/331-2277; www.jwcc.com.

SKID-MOUNTED FILTER PRESS

Kompress skid-mounted belt filter press systems from Komline-Sanderson are available in 1-, 15-, and 2-meter versions with feed pump, polymer system, control panel, belt washwater pump, interconnecting piping, drain pan, and air compressor or hydraulic power unit for belt steering and tensioning. The system only needs to be off-loaded, anchored in place, and connected to utilities. It is available in two- or three-belt designs and can achieve feed rates above 200 gpm. 800/225-5457; www.komline.com.



Kompress belt filter press systems from Komline-Sanderson

BIOSOLIDS DRYING PROCESS

The SOLIA drying process from Kruger USA couples air drying and aerobic fermentation. Solar radiation along with a SOLIAMIX automated windrow turner helps water evaporate



SOLIA drying process from Kruger USA

from the sludge for subsequent removal from the greenhouse. The turner keeps the biosolids aerated and promotes digestion, which produces heat to aid the drying process. Greenhouse drying can reduce the amount of sludge by 60 to 80 percent. 919/677-8310; www.krugerusa.com.

SIDE-DISCHARGE SPREADER

The Knight ProTwin Slinger side-discharge spreader from Kuhn North America uses an even, controlled spread pattern and optional scale system to provide precise application of biosolids. The lower discharge pan seals the discharge area during road travel, keeping material off the road and blocking public view. It guides material outside the tire tracks while spreading, helping keep the tires clear. The pan is hydraulically controlled by the operator from the truck cab. 608/897-2131; www.kuhnnorthamerica.com.



Knight ProTwin Slinger side-discharge spreader from Kuhn North America



Raptor Septage Acceptance Plant from Lakeside Equipment

SEPTAGE ACCEPTANCE PLANT

The Raptor Septage Acceptance Plant from Lakeside Equipment removes debris and inorganic solids from tank sludges. The heavy-duty unit incorporates the Raptor Fine Screen for screening, dewatering and compaction. Accessories include grit and rock removal, security access systems and automated accounting systems. With the addition of aerated grit removal, the system is offered as a complete plant. 630/837-5640; www.lake-side-equipment.com.

SCREW PRESS

The ACAT screw press is available in North America through Kusters Water, a division of Kusters Zima Corporation. It provides slow rotational speed, low maintenance, low noise level and low energy consumption. 864/576-0660; www.kusterswater.com.



ACAT screw press available through Kusters Water



Decanter centrifuge from Noxon North America

DECANTER CENTRIFUGE

The horizontal, solid-bowl (decanter) centrifuge from Noxon North America has a variable-frequency drive design that supplies fully electric drive with the same torque-generating characteristics as units with hydraulic back-drives. It can dewater a wide variety of sludges and slurries to cake solids concentrations with high capture efficiency. Materials of construction include high carbon (50W) steel and stainless 304 and 316, protected with tungsten carbide coatings. 416/843-6500; www.noxon.com.

(continued)

DISCHARGE BAGGING SYSTEM

The Longfill closed continuous bagging system from Paxxo connects to the discharge point of machines used to move, dewater or compact screenings and grit. Material is deposited into the continuous bag, which helps to contain odor and control spillage. Odors and materials are trapped inside, reducing environmental and health issues. 770/502-0055; www.paxxo.com.



Longfill bagging system from Paxxo



Prime Rotary Fan Press from Prime Solution

ROTARY FAN PRESS

The Prime Rotary Fan Press from Prime Solution simplifies dewatering by using continuous pressure differential technology. It provides slow rotation. 269/694-6666; www.psirotary.com.

MICRO CARBON SLUDGE REDUCER

BIO ENERGIZER micro carbon complex from Probiotic Solutions reduces sludge, odor, BOD/COD, FOG and operational upsets. It biochemically oxidizes sludge in lagoons and reduces the lagoon sludge blanket without draining, drying, dredging, handling or hauling. It increases volatile solids destruction and improves decant volume and settleability for greater digester and reactor capacity. 800/961-1220; www.probiotic.com.



BIO ENERGIZER micro carbon complex from Probiotic Solutions



Washer/Compactor from Schreiber

WASHER/COMPACTOR

The Schreiber Washer/Compactor washes out organics and dewater screenings in a batch sequence. Screenings enter the top of the unit and are agitated by a rotating shaftless screw, releasing entrained organic material. The organics in suspension drained back to the treatment stream. The washed screenings are

transferred over a barrier into the compactor section, where they are dewatered. Systems come in three sizes with inlet widths from 3 feet 8 inches to 9 feet 10 inches and screenings capacities from 19.5 to 135 cubic feet per hour. 205/655-7466; www.schreiberwater.com.

SCREW PRESS DEWATERING

The Schwing Bioset Screw Press does not need to suspend dewatering for the cleaning cycle. Results are similar to high-speed centrifuges with low energy and maintenance costs. Features include low speeds and automated control, robust construction, stainless steel wetted parts, a split-screen casing to simplify screw removal and minimize footprint, a perforated screen that allows for tight tolerances, a sealing lip and screen that can be replaced with the screw in place, and low washwater requirements. 715/247-3433; www.schwingbioset.com.



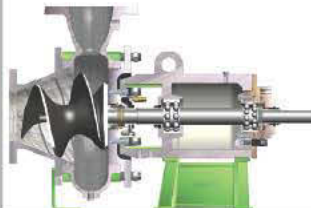
Screw Press from Schwing Bioset

LIQUID CHEMICAL METERING SKID SYSTEM

Pre-engineered liquid chemical metering skid systems from seepex are available with or without controls. They include progressive cavity pumps that have low operating costs and long life, ensure precise metering without pulsation or vapor lock, and are protected from dry run and over-pressure. The systems accommodate flows up to 100 gph and pressures to 350 psi. 937/864-7150; www.seepex.com.



Skid systems from seepex



Triton screw centrifugal pump from Vaughan Company

SCREW CENTRIFUGAL PUMP

The Triton screw centrifugal pump from Vaughan Company uses a high-efficiency non-clog design. Its open-channel impeller handles thick sludges, large or stringy solids, shear-sensitive fluids and delicate or highly abrasive materials. Features include steep performance curves, heavy-duty power frames, back cutter system and the flushless mechanical seal design to eliminate water flushing. 888/249-2467; www.chopperpumps.com.

SELF-CLEANING FINE SCREEN

The CleanFlo Monoscreen self-cleaning fine screen from WesTech Engineering suits a wide variety of wastewater and process water treatment applications. Using a reliable blade and drive system, it creates a progressive step motion that evenly distributes screenings while minimizing water-level surges. The result is a screenings capture ratio of 82.5 percent. 801/265-1000; www.westech-inc.com.



CleanFlo Monoscreen from WesTech Engineering



OpenCEL sludge pretreatment system from US Peroxide

SLUDGE PRETREATMENT SYSTEM

The OpenCEL sludge pretreatment system from US Peroxide enhances anaerobic digestion by pretreating waste activated sludge with focused pulsed technology. A rapidly pulsing, high-voltage beam is focused on the sludge as it passes through a cylindrical chamber. The pulse disturbs the polar bonds in the cell membrane molecules, causing countless tiny pores to form in the membrane. As the cell exits the chamber, osmosis causes the cell contents to comele with the surrounding material, making the cell contents bioavailable. 847/835-7418; www.opencel.com. tpo

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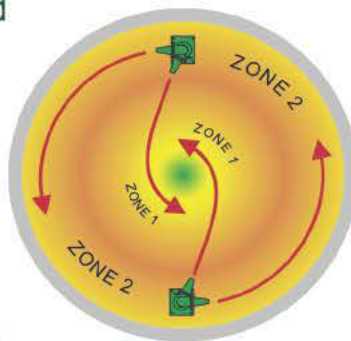


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By Scottie Dayton

Screens meet discharge permit

Problem

During rains, the combined sewer system of the Detroit Water and Sewer Department discharged 20 billion gallons annually to the Detroit and Rouge Rivers. The state mandated the flows at the outfall be filtered through 1/4-inch openings and disinfected. The screens had to sustain a 10-foot differential head in 10- by 21 1/2-foot-deep channels.

Solution

After a finite element analysis, the consulting engineer selected **Aquascreen fine screens from Andritz Separation**. Company personnel demonstrated that the design could handle extreme loads. The department installed six in-channel perforated panel traveling belt screens with 6 mm openings in the Oakwood CSO Retention Treatment Basin. Each unit handled 179 mgd.



RESULT

Since November 2011, the facility has had 10 CSOs and has met its permit requirements. **817/465-5611; www.andritz.com.**

Belt presses avert solids overload

Problem

Processing 38 to 40 gpm, the two 2-meter 16 s-wrap belt presses at the 30 mgd (design) Gloversville-Johnstown (N.Y.) Joint Wastewater Treatment Facility could not keep up with increased production caused by industrial high-strength influent.

Solution

The plant replaced the original equipment with two 2.5 meter **3DP belt presses from BDP Industries**. Each handles 55 to 60 gpm and processes up to a dry ton per hour. Independent gravity belts and a vertical pressure zone optimize dewatering, while open construction simplifies maintenance and operation.



RESULT

The plant dewateres 150,000 and 230,000 gpd of material at 3 percent solids, resulting in 100 wet tons of biosolids. Reducing the amount of solids recycled back through the process has improved the plant's performance. **518/527-5417; www.bdpindustries.com.**

Side-mount open-throat design prevents bridging

Problem

Biosolids at the Hay Road Wastewater Treatment Plant in Wilmington, Del., fell from a gravity belt thickener into a hopper. A floor below, biosolids bridged the inlet of the progressive cavity pump at the end of the hopper, causing the pump to run dry. Frequent repairs to the damaged stator strained the maintenance budget.

Solution

Officials purchased a custom **CL390 rotary lobe pump from Boerger**. The side-mount open-throat design prevented bridging, and the pump can temporarily run dry. Operators replace worn parts through the front cover without removing pipes or the drive systems.



RESULT

Management has inquired about two more pump-and-grinder applications. **612/435-73 00; www.boerger.com.**

Thickening centrifuge has multiple advantages

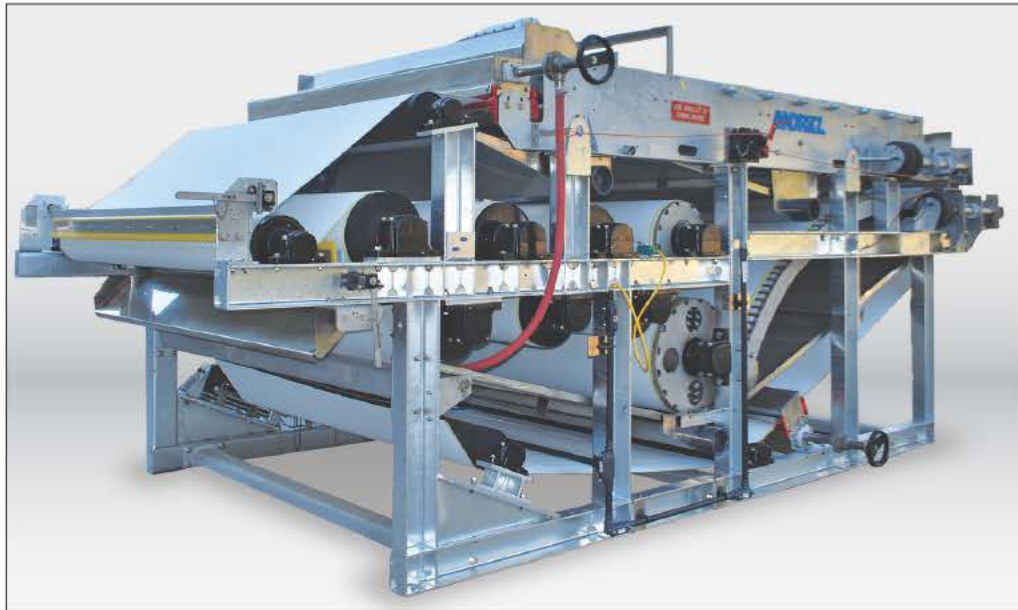
Problem

Odorous dissolved-air flotation thickener tanks at the Kenosha (Wis.) Water Utility Wastewater Treatment Facility occupied two floors of a 10,000-square-

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foot building and produced material at about 4 percent solids. The tanks required repairing, multiple pumps, and monitoring four hours per day.

Solution

Operators replaced the tanks with an enclosed **THK18-3 thickening centrifuge from Centrisys**. It has a 10 hp feed pump, a 50 hp main drive, and a 20 hp scroll drive, all controlled by variable-frequency drives. The unit, installed easily in a 1,000-square-foot building, produces material at 5 percent solids with thickening capabilities up to 7 percent. It requires minimal operator oversight and maintenance.

RESULT

The thicker biosolids improve digester operation and produce more biogas. The installation saved the utility \$80,000 to \$100,000 in pump and equipment upgrades. 262/654-6006; www.centrisys.us.



Bar screen reduces maintenance

Problem

Maintaining the chain bar screen at the 3.2 mgd Brush Creek conventional activated sludge treatment plant in Cranberry Township, Pa., was stressing the operators. Debris jammed rotating parts or passed through the screen, which required a major repair about twice a year.

Solution

Operations manager Mike Sedon discovered the **FlexRake bar screen from Duperon Corp.** at WEFTEC 2005. "It's a simple, effective piece of machinery that makes screening simpler and more reliable," he says. The unit eliminates confined-space entries and has an energy-efficient 3/4 hp drive system.

RESULT

"We're catching more rags and experiencing less pass-through," says Sedon. "Maintenance is nothing more than greasing the unit every other month. Other than that, it just runs." 800/383-8479; www.duperon.com.

(continued)



Cake bin system manages biosolids

Problem

The Blue Plains Advanced Wastewater Treatment Plant in Washington, D.C., needed cake bins with live bottoms to adjust the thermal hydrolysis process independently, and enough capacity to store biosolids at the 12-hour throughput rate.

Solution

The plant bought four 9,500-cubic-foot T-316 stainless steel **cake bin systems from Jim Myers & Sons**. The bins are 28 feet long, 35 feet tall and 18 feet wide. They taper to 9 feet wide and have four 20-inch-diameter shafted stainless steel screws in the live bottom pan. Options include local control stations, electric-actuated slide gates, load cells, level sensors, and 10 stainless steel chutes with sampling ports and spray water nozzles.

RESULT

Each bin receives biosolids from three centrifuges through chutes with electric actuated diverter gates. The covered tops support foot traffic. 704/554-8397; www.myersequipment.com.



Sludge no match for dewatering system

Problem

The belt press at the 6 mgd (design) Leipsic (Ohio) Wastewater Treatment Plant was outdated.

Solution

When **OR-TEC** offered to demonstrate its **Volute screw press** on waste activated sludge and



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septage, superintendent Tony Schroeder agreed to a five-day test. Cake and inlet solids numbers were run on a moisture balance supplied by the company. Capture rates, based on composite samples, were taken and tested by an independent laboratory.

RESULT

Cake was 15.8 to 29.29 percent solids for both materials using 10 to 18 pounds of polymer per dry ton. The lowest solids capture rate was 97 percent. The village bought the unit. "The press produces quality cake and filtrate, is economical, and requires minimal operator attention," says Schroeder. 216/475-5225; www.or-tec.com.

Screw press solves odor problems

Problem

Running the aging belt filter press at the Cardston (Alberta) Wastewater Treatment Plant required constant attention. Cake dryness, wash water consumption, odors, and maintenance were other issues.

Solution

The town purchased a **RoS3Q screw press from Huber Technology**. It occupies half the space of the original press, runs unattended, and produces dryer biosolids, eliminating odors. Water from the press is cleaner than influent at the headworks and produces no odor as it is fed back into the channel.

RESULT

"The screw press has become the premiere piece of equipment in the plant," says foreman Barton Atwood. 704/949-1010; www.huber-technology.com.



Rebuilding screens is economical solution

Problem

The five 60- by 7-foot self-cleaning influent screens at the Southside Wastewater Treatment Plant in Dallas were worn out. Replacing them would require removing the building's roof. Officials decided to rebuild instead and put the project out to bid.

Solution

FilterONE USA was the low bidder. Workers installed two screens from 2010-2011, and three screens from 2012-2013. They replaced the filter elements, shafts, and chains without removing the screens from the channels. During the project, plant labor to remove screenings was minimized, as was downtime.



RESULT

Rebuilding the screens greatly reduced the project's overall cost. 954/757-9741; www.filteroneusa.com. tpo



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1. WILO SINGLE-STAGE INLINE CENTRIFUGAL PUMP

The Stratos GIGA high-efficiency, single-stage inline centrifugal pump from WILO USA is designed for use in hot-water heating systems, closed cooling circuits and industrial process systems. The redesigned hydraulics and permanent magnet motor can achieve 1E4 efficiencies. Features include heads to 167 feet and flows to 275 gpm. **866/945-6872; www.wilo-usa.com.**

2. CSE-SEMAPHORE REMOTE GATEWAY

The TBox TG2 TeleControl remote gateway from CSE-Semaphore enables multiple devices to connect to cellular and IP SCADA networks. The system combines programmable automation, alarm management, data logging and SCADA communications with a Web 2.0 user interface and cyber security suite in a single package. **860/618-0293; www.cse-semaphore.com.**

3. POLYSCIENCE BENCHTOP CHILLERS

LS, LM and MM series low-temperature chillers from PolyScience, a division of Preston Industries, are designed to maximize bench space and provide up to 1,290 watts of cooling at 68 degrees F (20 degrees C). The LS Series has a working temperature range of -4 to 104 degrees F (-20 to 40 degrees C) and provides 475 watts of cooling at 14 degrees F (-10 degrees C). The LM Series has a working temperature range of 14 to 86 degrees F (-10 to 30 degrees C) and 230 watts of cooling capacity at 14 degrees F (-10 degrees C). The MM Series has a working temperature range of 23 to 122 degrees F (-5 to 50 degrees C) and provides 129 watts of cooling at 23 degrees F (-5 degrees C). **800/229-7569; www.polyscience.com.**

4. BLUE-WHITE INDUSTRIES PRO SERIES METERING PUMP

The ProSeries-M M-2 peristaltic metering pump from Blue-White Industries is designed for use in small- to mid-sized municipal water and wastewater systems. The pump, which can be used with a variety of aggressive and viscous chemicals, has feed rates from 0.007 to 15 gph with pressures to 125 psi, a 200:1 turndown ratio and 4-20 mA input and output. **714/893-8529; www.blue-white.com.**

5. GREEN ACCESS GANGWAY EXTENSION

The SB-RT telescoping ramp gangway with extended reach access from Green Access & Fall Protection is designed to protect operators working on top of tank trucks or rail cars. Features include adjustable dual-tension springs in both box-channel side panels. Folding handrails and telescoping midrails are made of heavy wall tubing. Other features include 1/2-inch bumpers and grip-strut walking surface. **www.green-mfg.com.**

6. METSO MOISTURE ANALYZER

The MR moisture analyzer from Metso Automation USA measures water content in bulk material, such as wood chips, minerals and biomass. The device has a touch-screen interface and can be connected to the distributed control or other plant system via Ethernet modbus. Moisture content can be measured in the field in less than two minutes. Calibrated with tap water, the analyzer handles sample volumes up to 0.8 liters, according to the European standard. **770/263-7863; www.metso.com.**

7. CW INDUSTRIES ENCLOSED POWER-SLIDE SWITCHES

Enclosed, heavy-duty, power-slide switches from CW Industries are rated at 16 amps at 125 VAC. The G/GS-2011 and G/GS-2012 series are dust proof and available in SPST and SPDT circuitries. The switches install into a panel opening of 0.550 by 1.125 inches and are available in custom colors. Optional toppers can be added for enhanced appearance. Switches can be modified for specific actuation forces, height requirements and style. They have an operating temperature range of -13 to 221 degrees F and are rated at 100,000 cycles, no load minimum. **215/355-7080; www.cwind.com.**

8. MATROX DIGITAL MATRIX SWITCH

Avio KVM extenders from Matrox Graphics are compatible with APCON IntellaPatch Series 3000 XE network switches, supporting 10 Gbps. Avio F120 and F125 KVM extenders enable users to run remote desktops without compromising graphics performance through the uncompressed, high-bandwidth transmission of digital content. **514/822-6000; www.matrox.com/graphics.**

9. TIDEFLEX INLINE CHECK VALVE

The CheckMate inline check valve from Tideflex Technologies, a division of Red Valve Company, is designed for backflow prevention and odor mitigation in outfalls, stormwater, CSO and SSO applications. The custom-engineered, all-rubber unibody design eliminates backflow from oceans, rivers and interceptors. The valve is made of 100 percent fabric and elastomer to eliminate corrosion and can open to a near-full pipe

diameter for maximum flow capacity. Valves are available in 4- to 72-inch sizes. **412/279-0044; www.redvalve.com.**

10. BIONOMIC VENTURE SCRUBBERS

Series 7000/8000 high-performance venture scrubbers from Bionomic Industries, available in a fully integrated, pre-engineered package, include recirculation pump, piping networks, instrumentation and automated controls. Outdoor units are available with a freeze protection package for cold weather operation. The scrubbing packages are designed to meet PM 10 and PM 2.5 particulate emission standards. **800/311-6767; www.bionomicind.com.**

11. LOWELL RATCHETING SOCKET WRENCH

The 8C ratcheting socket wrench from Lowell Corp. features a 1 1/4- by 1 1/16-inch hex socket and 1 1/8- by 15/16-inch socket for tightening 3/4- and 5/8-inch bolts. The 2.5-pound wrench is 1/2-inch thick, has a 17-inch handle and is rated at 200 ft-lbs torque. The ratchets have 36 teeth in a 10-degree handle throw for working in tight locations. **800/456-9355; www.lowellcorp.com.**

12. AALBORG PUMP HEAD

TPU1 and TPU2 pump heads from AALBORG are mounted on a front panel with adjustable occlusion wall and safety cover. Designed for low to high viscosities, the pump heads feature four rollers (TPU 1) or 10 rollers (TPU 2) to minimize pulsing, 340 inches maximum water lift at 12.3 psig and 350 inches water suction at 12.6 psig. **845/770-3000; www.aalborg.com.**

(continued)

product spotlight

Septage Screening System Cuts Truck Unloading Time

By Ted J. Rulseh

Flo-SeptageStation DM
from Enviro-Care



A screening system from **Enviro-Care** for septage and heavy sludges is designed to address wastewater treatment plants' desires for high uptime, low maintenance cost, and short truck unloading times.

The **Flo-SeptageStation DM** unit is engineered for screening large volumes of septage and other materials with heavy inorganic solids loadings. It separates, washes and dewateres the materials to prepare them for final disposal. The company offers the technology through an exclusive license with Italy-based SAVI S.R.L. Units are available in 525 gpm, 650 gpm and 875 gpm capacities.

"The system is based on rotary drum screen technology that has been proven worldwide since 1999 in wastewater treatment and membrane bioreactor pretreatment," says Alan Spratt, regional sales engineer. "It has been adapted for use in septage applications. The bottom-line goal was to get trucks in and out as quickly as possible. Septage is often a source of revenue for a treatment plant, and the more trucks they can serve in a day, the more revenue they can generate."

As septage enters the unit, it is fed directly into the rotating drum screen. The inlet area is sloped on the bottom and curved to eliminate corners that could trap material and lead to clogging. As the screen rotates, solid objects are captured on flights that carry them around the drum and deposit them in an auger trough. The collection trough extends beyond the screen opening to allow better collection of solids and reduce solids recycle. The system uses no auger brushes. The auger conveys the solids into the washing zone and then to dewatering.

A dual drive system allows the screen and auger to work independently. Screen speed is reduced to improve screening efficiency, and auger speed is increased to evacuate solids from the system faster. The drum screen sits at a 25-degree angle to increase capture and transport of solids and enable faster unloading.

The screen is supported at the drive end by a heavy-duty industrial bearing assembly.

No support members are required at the influent end. Maintenance costs are reduced because the units use no grinders, rock traps or other ancillary equipment. **815/636-8306; www.enviro-care.com.**





13. OMEGA STAINLESS STEEL AC MOTORS

WSS stainless steel AC motors from Omega feature windings double-dipped and cured in polyester insulating varnish, anti-rust coated rotor and double-lip seals plus V-ring shaft slingers. The three-phase industrial grade washdown duty motors are available in 1/3 to 2 hp (3,600 and 1,800 rpm) and 208 to 230/460 volt. **800/826-6342; www.omega.com.**

14. LARSON ELECTRONICS PORTABLE WORK LIGHT TOWER

The WAL-2X400MCE portable work light tower from Larson Electronics enables operators to illuminate 50,000 square feet of workspace. The light includes a wheeled base platform, detachable metal halide lamp assembly and adjustable center mast. Suitable for use in wet locations, the light features aluminum reflectors and heat/impact-resistant tempered flat door glass for durability. **800/369-6671; www.magnalight.com.**

15. ADALET STAINLESS STEEL INSTRUMENT HOUSING

The XIHNS stainless steel, explosion-proof instrument housing from Adalet has a 4 1/16-inch bored throat to accommodate a variety of OEM instruments and devices. Two solid cover and two glass cover options are available. The glass cover has a 3.21-inch viewing window and low-profile, tab-free retaining ring. Other features include removable, internal mounting pan for easy installation, three 3/4-inch conduit entries (six optional) and two cast-on mounting tabs (third optional). **216/267-9000; www.adalet.com.**

HACH NITRIFICATION CONTROL MODULE

The RTC105 nitrification/denitrification system from Hach provides real-time control of aeration in oxidation ditches and sequencing batch reactors, ensuring energy efficiency and constant nitrogen levels in effluent. The module control system installs in about an hour. **800/227-4224; www.hach.com.**

16. MSA SENSOR FOR MULTIGAS DETECTORS

The SO₂/H₂S-LC XCell sensor for Altair 4X multigas detectors from MSA has a range of 0-20 ppm SO₂ and 0-100 ppm H₂S with 0.1 ppm resolution on both channels. The standard H₂S low concentration channel meets ACGIH recommendations for 1 ppm TLV. The sensor provides pump tests in less than 10 seconds and full scan calibration in 60 seconds. **www.msasafety.com.**

17. PENTAIR EQUIPMENT 60MM POWER DISTRIBUTION SYSTEM

The Hoffman Wohner 60mm busbar power distribution system from Pentair Equipment Protection features components mounted onto pre-wired adapters that snap onto sliding DIN rails for close-proximity placement. The system can distribute three-phase power greater than 1,600 amps at 690 volts, as well as supply single-phase or DC power. The busbar input and output terminals accommodate wire sizes up to 600 mcm. **763/421-2240; www.hoffmanonline.com.**

18. NEPTUNE PERISTALTIC HOSE PUMP

The Abaque series of peristaltic hose pumps from Neptune Chemical Pump Co. are available in nine models (AB10 to AB100) and flow rates from 0.07 to 211 gpm. The seal-free design eliminates leaks and contamination, enabling the pumps to handle challenging applications in the municipal treatment industry. The self-priming, run-dry pumps can operate in forward or reverse with lift capabilities to 295 feet and discharge pressures to 217 psi. **215/699-8700; www.neptune1.com.**

19. JWC ENVIRONMENTAL INDUSTRIAL GRINDER

The 100 hp (maximum) 7 SHRED industrial grinder from JWC Environmental has three cutting chambers (30, 40 and 50 inches) with 10-inch diameter cutters and a variety of cutter types and thickness options to process solids such as rock, wood, plastics, bone, food waste and textiles. It is designed to be horizontally mounted on a stand with a custom hopper that allows solids to feed from a conveyor, sluice or be manually fed. Applications include petroleum and municipal solid waste processing. **800/331-2277; www.jwce.com. tpo**

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people/awards

Tom Schultz, director of the Mechanic Falls (Maine) Wastewater Treatment Plant, retired after nearly 42 years in the field.

The **City of Willis Public Works Department** won the Category 1 Municipal Wastewater Treatment Plant of the Year Award from the Water Environment Association of Texas.

Bari Wrubel, supervising operator of the Marysville Water Plant and Wastewater Treatment Plant, received the Public Utility Management Professional of the Year Award from the Michigan Water Environment Association.

H2M received a 2013 Gold Award from the American Council of Engineering Companies of New York in the category of Waste and Storm Water. Judges for the Engineering Excellence Awards competition selected the firm's project entry, the Patchogue Wastewater Treatment Facility Upgrade and Expansion, for its demonstration of superior skill and ingenuity.

Dargan Evans, wastewater treatment plant operator for Renewable Water Resources, received the Wastewater Treatment Plant Operator of the Year Award from the Water Environment of South Carolina.

The **Moberly Wastewater Treatment Plant** received the Biosolids Management Award from the Missouri Water Environment Association.

TPO welcomes your contribution to this listing. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements to editor@tpomag.com.

education

California

The California Water Environment Association has a Collection System Benchmarking Workshop on Aug. 21 (location to be determined). Visit www.cwea.org.

Florida

The University of Florida TREEO Center is offering these courses in Gainesville:

- Aug. 27-29 – Process Control of Advanced Waste Treatment Plants
- Sept. 10-11 – Water Reclamation and Treatment Processes
- Sept. 17-19 – Activated Sludge Process Control and Troubleshooting
- Oct. 15-16 – Sequencing Batch Reactor Operation: Make It Work for You
- Oct. 29-31 – Microbiology of Activated Sludge
- Nov. 5-6 – Flow Meter Calibrations

Visit www.treeo.ufl.edu/wastewater-courses.aspx.

Georgia

The Georgia Association of Water Professionals will hold a Nutrient Removal Workshop on Aug. 28 in Marietta, Ga. Visit www.gawponline.org.

Illinois

The Illinois Water Environment Association is offering these courses:

- Nov. 14 – Collection Systems Seminar, Lisle
- Nov. 21 – Biosolids Seminar, location TBD

Visit www.iweasite.org.

Michigan

The Michigan Water Environment Association is offering these courses in East Lansing:

CALENDAR OF EVENTS

July 30-Aug. 2

Kansas Water Environment Association Annual Water and Wastewater School, Lawrence. Visit www.kwea.net.

Aug. 6-8

2013 International Society of Automation Water/Wastewater and Automatic Controls Symposium, Crowne Plaza Orlando-Universal Hotel, Orlando, Fla. Visit www.wef.org.

Aug. 27-29

Kansas Water Environment Association Annual Conference, Hyatt Regency Hotel, Wichita. Visit www.kwea.net.

Sept. 8-11

Rocky Mountain Water Environment Association Annual Conference, Keystone, Colo. Visit www.rmwea.org.

Sept. 29-Oct. 1

Atlantic Canada Water & Wastewater Association Annual Conference, Crown Plaza, Fredericton Convention Center, Fredericton, New Brunswick. Visit www.acwwa.ca.

Oct. 5-9

2013 Water Environment Federation Technical Exhibition and Conference, McCormick Place South, Chicago. Visit www.weftec.org.

Oct. 22-25

Wisconsin Wastewater Operators Association Annual Conference, Holiday Inn, Stevens Point. Visit www.wwoa.org.

Nov. 12-13

Georgia Association of Water Professionals Fall Conference and Expo, Athens. Call 770/419-6336 or visit www.gawponline.org.

- Sept. 17 – Collections Seminar
 - Oct. 30 – Health and Safety Seminar
 - Nov. 6 – Process Seminar
- Visit www.mi-wea.org.

Nebraska

The Nebraska Water Environment Association is offering these courses:

- Aug. 15 – Wastewater Training, Omaha
- Sept. 12 – Wastewater Training, Sidney

Visit www.ne-wea.org.

New York

The New York Water Environment Association is offering these courses:

- Aug. 21 – Pump Stations and Pump Hydraulics, Rochester
- Oct. 23 – Portable Pumps – Uses, Sizing and Planning, Babylon

Visit www.nywea.org.

Ohio

The Ohio Water Environment Association has an Operations/Laboratory Analysts Workshop Sept. 25-26 in Grove City. Visit www.ohiowea.org.

Texas

The Water Environment Association of Texas has a Biosolids Odor and Corrosion Conference and Expo July 31-Aug. 1 in San Marcos. Visit www.weat.org.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development has a Wastewater Treatment Processes and Technologies course Sept. 24-26 in Madison. Visit <http://epdweb.engr.wisc.edu/course> on Sept. 24-26 in Madison. Visit <http://epdweb.engr.wisc.edu>. **tpo**

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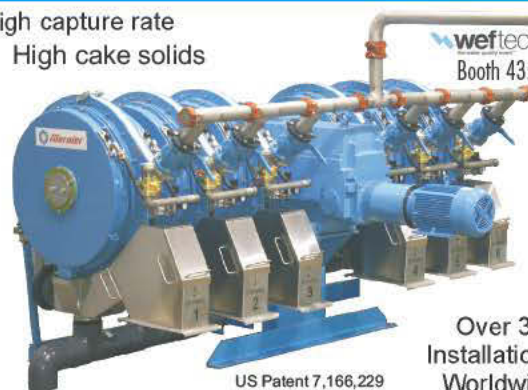
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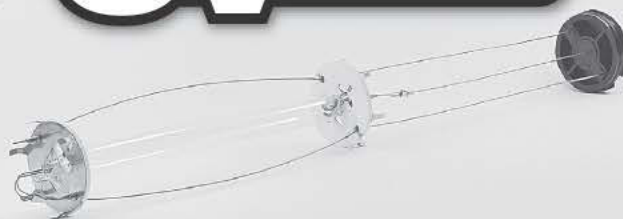
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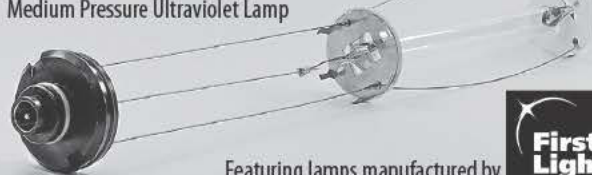
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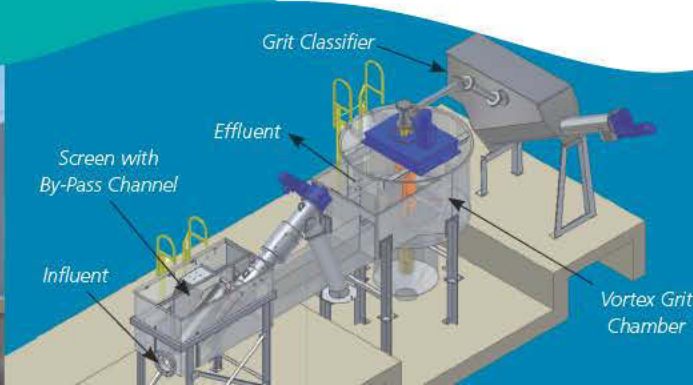
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Working in the lab can be one of the most important, and most challenging, roles at a wastewater treatment facility. In Crystal Lake, IL, it's Lab Supervisor Emma Kohl who's heading up their laboratory processes.

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USABlueBook is proud to serve Emma, as well as the entire team at Crystal Lake's WWTP. We look forward to assisting them with all of their needs for a long time to come.

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