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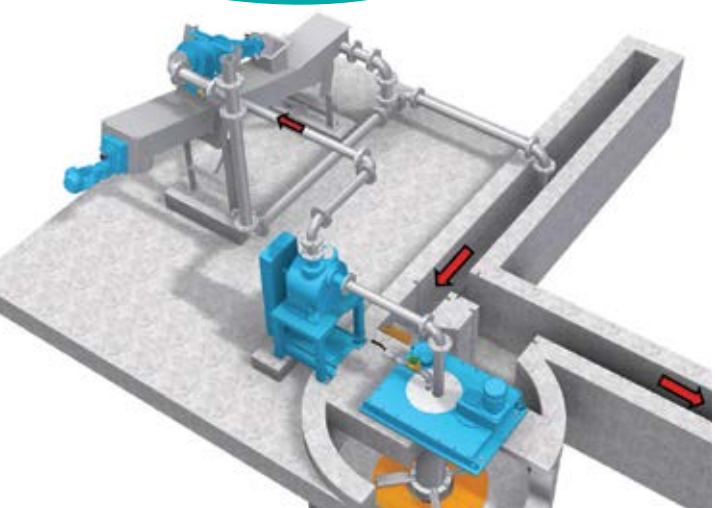

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IN THIS ISSUE

FEATURES

DEPARTMENTS

Messages

CSWEA/WEF News

Section News

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Craig Kelman & Associates

Tel: (866)985-9780Fax: (866) 985-9799
www.kelmanonline.com *info@kelman.ca*
Design/Layout: Kiersten Drysdale
Marketing Manager: Jeff Kutny, *jeff@kelman.ca*
Advertising Co-ordinator: Stefanie Hagidiakow
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Growth and Opportunity Await

By Amy Underwood

When I decided to become more engaged in CSWEA more than 20 years ago, the high technical quality of our events and magazine was part of what drew me in. Since then, we have improved our programming every year, streamlining the Annual Meeting and strengthening our YP and student activities, often through planning done at the annual Central States Exchange (CSX). Given the great improvements we have made to an already exceptional program, I always wonder what we could possibly accomplish at CSX. And yet, every year I am amazed at the ideas we generate to better the services we provide to our members and to the public. This year was no exception.

The 2023 CSX was held July 20 and 21 at the Kalahari Resort in Wisconsin Dells. 20 CSX attendees exchanged information on the activities of the association and each section. It's rewarding to hear the excitement of members as they complement something that another section is doing and come up with a plan to incorporate it into their own section's activities. It's also gratifying to witness how we support each other with solicited feedback on ways to improve what we do.

Every year at CSX, we "retool" the Annual Meeting, discussing what went well and what was not as effective as hoped. The response to the 2022 CSWEA Annual Meeting was highly positive. The annual meeting had record attendance and revenue. We received great feedback about the keynote speaker and the theme. We heard a few suggestions for improvements, but overall, the bar has been set pretty high. The Illinois Local Arrangements Committee looks forward to the challenge of making next year's Annual Meeting even more successful and memorable.

Among the many concepts that we brainstormed, the two common themes that emerged from the small groups discussions at CSX included young professional (YP) involvement and public education.

The following measurable goals and potential actions were identified under these themes.

Goal One:
Increasing YP mentorship

a) Host a minimum of two mentorship events per year, such as a mentorship breakfast at the Education Seminar or a "speed dating" event at the Annual Meeting.
b) Create a mentorship program.

Goal Two:
Integrating YP participation into all association committees and activities

a) Recruit YP members for every committee.
b) Add a summary of each committee on the website.
c) Host regular new member webinars, covering how to become more involved or highlighting a committee.
d) Have a CSWEA booth in the Exhibit Hall at the Annual Meeting.

Goal Three:
Increasing public education efforts

a) Create a tool kit of educational materials.
b) Develop a social media campaign to educate rate payers.

Please assist CSWEA by incorporating these goals where appropriate. If you are not currently involved in a related committee but are interested in helping, reach out to CSWEA and volunteer. Other goals and action plans identified at CSX in addition to those above will be shared with the appropriate committees.

As you are likely aware from previous WEF Delegate's reports, Diversity, Equity and Inclusion (DEI) has been a key focus area for WEF over the past few years. During CSX, we discussed where CSWEA currently does well with DEI and identified additional ways that CSWEA can ensure DEI in our association and our industry. CSX attendees agreed that among other things CSWEA exhibits DEI in the diversity of our leadership and members and through the student design competition, our involvement in Global Water Stewardship and our emphasis on YP programming. Attendees agreed that DEI needs to be a grassroots effort. Rather than being a separate initiative, DEI needs to be incorporated into everything CSWEA does.

Here are a couple of the ideas for future DEI efforts that we identified:

1. Expand the Public Education Committees' activities to provide public awareness through activities focused on underserved communities. An example is working with the Boys & Girls Club to teach about the clean water industry and potential professions in our field.
2. Encourage all existing committees to incorporate DEI into their committee rosters and activities.

Additional information on DEI may be found on *www.wef.org*.

In closing, I'd like to share some exciting news. CSWEA has been awarded an $8,000 member association (MA) grant from WEF for the Midwest Student Design Competition (MSDC). Thank you to Joe Lapastora for writing the application and your continued dedication to the MSDC. Great job, everyone! CS

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WEFTEC, WEF, and WEFMAX

By WEF Delegates David Arnott and Rich Hussey

David Arnott

Rich Hussey

We hope that everyone is enjoying these last weeks of summer. With WEFTEC right around the corner, WEF staff are in full-on planning mode and look forward to seeing many members enjoy the upcoming WEFTEC in Chicago, IL. The 96th Annual Technical Exhibition and Conference takes place September 30 to October 4, 2023, at McCormick Place in Chicago, IL. The 2023 Digital Conference Preview is now available (*https://bit.ly/2023digitalconferencepreview*) and if you want to see more, WEFTEC-at-a-Glance (*www.weftec.org/attend/weftec-at-a-glance*) will provide you a day-by-day breakdown of events. We encourage you to check back as more links and details will be added to the WEFTEC homepage as they develop. WEFTEC allows us to come together to discuss the industry challenges, provide educational opportunities, and allow peers to further strengthen their relationships or develop new relationships with industry leaders. We sincerely hope that you and your organization are able to attend.

The Delegates have a number of meetings and proposed revisions to various policies and procedures throughout the organization. We are here to help summarize and assist with the CSWEA members to address or bring up any concerns that members may have on various issues/topics. Below we are going to summarize some of the key items being brought at the upcoming meetings.

WEF is proposing some changes with supporting rationale related to the Board Committees, including formalizing the Ethics Committee, removing the WEFTEC Advisory Committee, and shifting existing Subcommittees to Committees; as well as adjustments to the text related to the Member Engagement Transformation (MET).

> "WEFTEC allows us to come together to discuss the industry challenges, provide educational opportunities, and allow peers to further strengthen their relationships or develop new relationships with industry leaders."

These proposed changes have been reviewed and approved by the Bylaws Subcommittee, the Governance Committee, and the Board.

As stated in the HOD Policies and Procedures: *"WEF staff shall make copies of such proposed amendments available to the general membership, Membership Associations, and each Member of the HOD at least 90 days prior to the scheduled vote."*

Also, during the upcoming September meeting, which will include the WEF Business Meeting, as well as the 2022-2023 &2023-2024 HOD Meetings, Delegates will be asked to vote on and confirm the following:

1. The Charter for the proposed HOD Communication Committee
2. The Charter for the proposed HOD Water Advocacy Committee

The Communications Committee shall consist of up to 10 individuals chosen from the HOD. The committee members shall include the Speaker, Past-Speaker, and eight Delegates, based on qualifications and interests in communication activities. Delegate selection shall seek to maintain diverse representation of the HOD based on geography and size of MAs being represented. The co-chairs shall be selected from the committee members. The committee members will be assigned as a liaison to the other HOD committees and work groups.

The Communications Committee shall coordinate, develop, and distribute materials pertaining to the HOD, both internally and with outside stakeholders. The committee shall be responsible for, although not limited to, the following:

A. New delegate onboarding.
B. Development and distribution of quarterly HOD reports and BOT backgrounders.
C. Content development for monthly HOD videos.
D. And management and content development for HOD social media, including the LinkedIn page.

Click HERE to return to Table of Contents

The committee shall also assist in document management and maintenance of the "WEF Community" page and help MAs in the development and distribution of any requested articles, advertisements, etc. It is important that the committee distribute existing HOD information and documents as well. Through national and local WEF leadership, the goal of these efforts is to create a more forward facing HOD, with active engagement through internal and external stakeholders.

The Water Advocacy Committee shall consist of up to seven individuals chosen from the HOD. The committee members shall include the Speaker-elect, and up to six Delegates chosen from the HOD, based on qualifications and interests in Water Advocacy activities. Delegate selection shall seek to maintain diverse representation of the HOD based on geography and size of MAs being represented and to the extent practical include underrepresented and underserved members. The Chair shall be appointed by the Nominating Committee, and ideally will have served on a Water Advocacy Workgroup previously.

The overarching goal of the Water Advocacy committee is to strengthen Member Association (MA) Water Advocacy efforts with a focus on local, state and regional approaches. The committee shall do this by building on research completed to date and gaining more understanding of existing MA Water Advocacy programs and efforts through its committee members and the HOD. The committee will provide a platform to share MA Advocacy efforts within the HOD and WEF with the goal of reaching MA's who do not currently have water advocacy programs or efforts.

Upon confirmation, these committees will officially become part of the HOD Policies and Procedures as the sixth standing committee of the HOD.

WEF is also pleased to announce the selection of Wm. Patrick (Pat) Nichols as the interim Executive Director, effective June 1, 2023. Nichols will oversee WEF's continued implementation of the organization's new strategic plan. He is a specialist in guiding not-for-profit organizations through major transitions and positioning them for success by focusing on the mission and core values, strategic clarity, integrity, accountability, and customer service.

Also, it is never too early to start planning for WEFMAX. Here is a summary of the dates and locations for WEFMAX 2024:

- **April 10-12, 2024** | Virginia WEA in Old Town Alexandria, VA
- **May 15-17, 2024** | WEA of Utah in Park City, UT
- **May 29-31, 2024** | Florida WEA in St. Petersburg, FL

Dave Arnott is rolling off as delegate.

"I would like to thank you for the opportunity to serve as your delegate for the last three years," he says. "It has been a pleasure to help serve as the communication conduit between our Member Association and WEF. It was exciting to gain a different perspective in our industry through my involvement at WEF. It was inspiring to meet so many people that share our passion for a clean water environment. I especially enjoyed the WEFMAX events where MAs shared best practices, successes, and challenges."

Dave adds: "The Association is in strong hands with Rich Hussey transferring to senior delegate and Anna Munson coming on board as the second delegate."

We look forward to hearing from our membership how we can advocate further for CSWEA membership. Please reach out and let us know how we can further assist. CS

Change is Inevitable

By Chris Lefebvre

Some things never seem to change. Over the past 30 years the football team in Green Bay has had two different opening day starting Quarterbacks. One of them is in the Hall of Fame and the other will surely be a first ballot addition to the Hall of Fame upon his retirement. This brings us to a very anxious time in Wisconsin, as the current QB1 is no longer a guy that we're sure can carry the team. Will they have a merry-go-round of starting quarterbacks for the next 30 years like our neighbors to the South or will #10 follow in the footsteps of his predecessors? The answer to that question will ultimately depend on how well his mentors guided him.

I don't mention this strictly to take a shot at my friends who root for that team from down south – it is also a great example of what happens in our industry. Typically, people in leadership roles stick around for decades. When these leaders leave their organization, they can leave a very large knowledge gap if they aren't consistently passing this information on to their teammates. Luckily, in our industry, we typically aren't competing for a job, so there is no downside to mentoring our future leaders. This mentoring helps ensure a seamless transition when a leader takes a new position or rides off into the sunset to enjoy retirement. A great way to guide the future leaders of our industry is getting your staff involved in CSWEA. I remember at one of my first CSWEA Annual Meetings, Keith Haas suggested bringing a new person with you to a CSWEA event. This is a great way to strengthen your organization and ultimately take a person that you see potential in while giving them the opportunity to see what this industry is all about. I know I wouldn't be where I am today without someone extending that invitation to me.

When you are reading this article, we will hopefully be enjoying some beautiful autumn weather reminiscing on a summer full of enjoyment. One of the highlights from the Wisconsin Section's summer was the YP Committee holding their annual Brewer Game Outing in early August. This year they were treated to a 14-1 victory by the home team and enjoyed a great networking opportunity with other CSWEA members. I was unfortunately unable to attend but from the people I talked to it was once again a great event. If you haven't attended this one yet, get it on your radar for next year. It is tailored to the YPs but open to all CSWEA members and I would be willing to bet that it will happen again next year.

With October being filled with WEFTEC in Chicago and the WWOA annual conference in Wisconsin Dells, most of our committees choose not to plan events during this time of year but keep an eye out for emails from CSWEA for upcoming webinars and events in case that changes. If you are going to WEFTEC 2023 in Chicago, I highly encourage you to go watch our Operations Challenge Teams compete. These competitors put a ton of effort into preparing for this competition and it makes for an entertaining event to watch.

Award nomination season is in full gear. The deadline to nominate someone for most Central States Awards is December 1. That means there is still plenty of time to nominate your deserving colleagues for an award. They can't be recognized if they aren't nominated so why not make the nomination?

Thank you for your continued dedication to doing the little things that make our industry great. CS

"Typically, people in leadership roles stick around for decades. When these leaders leave their organization, they can leave a very large knowledge gap if they aren't consistently passing this information on to their teammates. Luckily, in our industry, we typically aren't competing for a job, so there is no downside to mentoring our future leaders."

Click HERE to return to Table of Contents

Photo Spread:
A WI SECTION MEETING

Photos by Lindsey Busch

Educating the Public About Wastewater

By Samidha Junghare

Last weekend I did something outside of my typical job duties as an engineer – I worked at the Carlton County fair and got to represent Western Lake Superior Sanitary District (WLSSD) at a booth. Our environmental programing staff does so many fantastic public education programs and initiatives that I can't list them all, but one of them is to host a booth at various local fairs and festivals. Last weekend fairgoers who came to our booth got to spin the wheel, answer a question about wastewater treatment, farming and gardening (we have both biosolids and compost produced at WLSSD), or pollution prevention, and then select a fun prize. People seemed to really enjoy themselves and everyone walked away knowing something about our industry that they didn't know before.

Here are some fun takeaways I had from working at the booth.

1) Most people don't realize WLSSD discharges to the Saint Louis River which then flows into Lake Superior. We had a lot of guesses that we discharge into the Mississippi river. This was a prideful reminder for me that we are helping to protect not only the St Louis River and Lake Superior, but all the bodies in the Great Lakes system which eventually flows into the Atlantic Ocean. I guess you could call it a watershed moment for me (ha-ha).
2) Fun fact: it takes over 200 years for a drop of water to flow from Lake Superior to the Atlantic Ocean. By protecting Lake Superior, we are helping to protect the drinking water source for thousands of people in the cities of Duluth, Superior, Proctor, Hermantown, and Rice Lake.
3) Something that I hadn't given much thought to before was that even if homeowners are on a septic system and not connected to the city sewer system, when their tanks get cleaned out, those septic haulers bring it to WLSSD to be treated so all those homeowners (including myself) are still tied into WLSSD!
4) It's not just us that think what we do is cool, the general public seems to understand and really appreciate that we are protecting our waterways and reclaiming nutrients and energy.
5) People who garden *really* enjoy talking shop with other people that garden. My booth-mate Ryan Ihrke was masterful in engaging with the gardening folks and frankly with people of all ages and backgrounds. One thing he did that I truly appreciated was to approach people and educate them about all the various job opportunities in our field.
6) This – public education – feels like one of the most important initiatives that we need to be focusing on in our industry and I feel that one-on-one engagement is likely to be more fruitful than many other methods out there.

So, that was a little bit about my one-day stint in public education. If you can carve out time to engage with the public even if it isn't part of your regular job duties, I recommend seizing the opportunity. The next festival I attend I will probably be on the other side of the booth. It might be the MN State Fair, Chester Bowl Fall Fest, or Bayfield Applefest, there are so many events to choose from. I hope you and your friends and family can get out and enjoy your local festivals and the fall season. CS

Click HERE to return to Table of Contents

Join the Brightest and Best

By Jason Neighbors

And just like that we are heading into fall! Where did the summer go? With the Midwest winters slowing projects to a snail's pace, a lot of us find ourselves trying to get all the outdoor projects done before the warm weather fades away. In this busy season we find new ways to get everything accomplished within our budgets.

With the out-of-sight out-of-mind mentality that often comes with our industry, doing more with less is an all-too-common norm. This need to stretch the life of our equipment and facilities beyond their estimated useful life is challenging to say the least. The response to these needs is where really exciting innovations arise. Forged from necessity and limited resources, Operator and Engineers alike get creative to bring about solutions to process problems that would normally require large capital investment. It has been in these instances that I have leaned on the amazing network of peers that I have met by being active in CSWEA and WEF. This network has some of the best hands-on knowledge base for almost any issue that could arise. Someone has been there and done that, as they say.

The Central States Water Environment Association is one of the best tools you can have in the toolbox. How do we acquire this tool? Get involved in one of the many CSWEA committees, attend a seminar, attend the WEFTEC conference, take an operator training course, etc. These opportunities are where you will meet other professionals and peers, forging relationships that will last a lifetime. CSWEA is a collection of some of the brightest and best minds in our industry.

Throughout my career I have sat on several committees within CSWEA, took part in Global Water Stewardship, and competed in the Operations Challenge at WEFTEC. With these experiences I have met a lot of fellow operators and Engineers and we have kept in touch. We continuously bounce ideas off one another and ask advice that helps us navigate through all the challenges that we encounter. Not to mention getting some really great grill and smoker recipes!

So, get out there and attend one of the upcoming events. There are Operator Training Webinars monthly: the Fundamentals of Preliminary and Primary Treatment on September 14, the Fundamentals of Maintenance 1 on October 31. As well, WEFTEC is in Chicago this year from October 1 through the 4. Don't forget to catch the Illinois Operations Seminar on September 13 at the Naperville IL, Springbrook Water Reclamation Center and the Illinois Biosolids, Energy, Efficiency, and Recovery Seminar on November 15 at the Fox River Water Reclamation District. CS

"CSWEA is a collection of some of the brightest and best minds in our industry."

Rick Manner

Executive Director,
Urbana and Champaign Sanitary District

"These industry service organizations help us all do more than we can as individuals. But beyond that, you meet more great people, you learn, and you have fun. For me, I've received all of those benefits many times over by getting involved at CSWEA."

I Never Expected Crow to Taste So Satisfying...

Frankly, I didn't have much of a plan as a high-school graduate. I was attracted to engineering because I liked figuring out how things work and, because I'm inherently lazy, I'm always looking for the most-efficient way to get work done. Chemistry was especially interesting because we had an excuse to start fires and set off explosions legally, while learning in High School.

I got to roll those concepts together, and get paid for it, as a Chemical Engineering Co-op student. I worked at Dow Chemical for four semesters while still in school. I strongly recommend Co-op work. I found out that even if I was destined to push paper, I needed to work at someplace that actually did something real and important.

Co-oping also changed my career path. While there I met the inventor who transformed the world of shipping by inventing polystyrene foam bead 'peanuts.' I also learned that Saran Wrap is named after the wives of the two Dow chemists who created it. Oddly enough, my future wife didn't mind that she lost the opportunity to see her name on grocery store shelves, when I decided that working to clean poop-water more efficiently was how I'd like to transform the world.

While in graduate school, I was in the same physical lab as (now Professor) Nancy Love. We were working on completely separate projects. She was researching the idea of the 'luxury uptake of phosphorous' at treatment plants, which was then being advocated by 'some PhD' from South Africa.

As I watched her struggle to get her lab-scale bioreactors to work, I made the most-memorable of my many wrongheaded predictions, saying "I'll never see that succeed in a full-scale plant. We can't force microbes to do that!" Years later, I was very happy to eat some crow and formally apologize to Dr. Barnard when he was giving my employer some expert advice on how to start up bio-P removal.

It was also during graduate school when my adviser hosted a seminar advising the new engineers to be sure to get actively involved at a trade organization – to find the time to attend meetings, to join a committee, and to actively volunteer. First, we owe it to organization because these industry service organizations help us all do more than we can as individuals. But beyond that, you meet more great people, you learn, and you have fun. For me, I've received all of those benefits many times over by getting involved at CSWEA.

Early in my career, I was forced to learn about the electric bills at Fox River Water Reclamation District due to deregulation of the utility industry. Back then, our plant used about a million dollars a year in energy and our industry as a whole was using about 4% of the world's electricity. I was impressed that we had generators that cut our own bills by 15%. I hoped that by being a good engineer I could find enough smart ideas to someday double those savings. Then I hoped that eventually wastewater professionals might reduce the world's electric bill down to 3%, or less.

So, around 2000, when I first heard about a plant in Scandinavia that employed five PhD, claiming they were net-zero energy users, I made another one of those wrongheaded "I'll never see that..." predictions. And once again, I'm happy to be entirely wrong.

I'm at the Urbana and Champaign Sanitary District now. In two years, we expect to be close to net-zero at one of our plants, once we install modern co-generation equipment. At our other one plant, we'll be producing 85% of our electricity from a solar array installed on the unused land buffering our facilities from the neighbors.

While it is fun to brag about the glitzy aspects of our energy transformations, I prefer wrap things up by emphasizing our first job of protecting public health and water quality. I've been around the industry long enough that I have had a hand in cleaning up over 300 billion gallons of water and I've seen the health of our waterways improve year-by-year. I hope you all can also find similar satisfaction in your careers! CS

Christine Hengel-Prom

Project Engineer, Black & Veatch, Milwaukee, WI

Christine Hengel-Prom graduated with a bachelor's in civil engineering from the Milwaukee School of Engineering (MSOE) in 2020. Christine is passionate about wastewater treatment and is going back to school at University of Wisconsin – Madison to get her Master of Environmental Engineering while working full-time at Black & Veatch. Her work experience is centered around wastewater treatment plant design, and she is hoping to branch into a more technical, process engineering role.

As a student, Christine competed on the MSOE team at the CSWEA Student Design Competition in 2019. Christine's team was sponsored by CSWEA to compete in the 2019 Student Design Competition at WEFTEC, where her team placed 4th. Christine competed with the MSOE team again in 2020. The competition, which was virtual that year, was the inaugural Midwest Student Design Competition (MSDC). Students from neighboring Midwest member associations (MA), which do not have their own student design competition, were also invited (their MA then sponsors the winner from their MA to compete at WEFTEC). CSWEA now hosts the MSDC annually in April.

> "Christine is appreciative of the role that the MSDC and CSWEA have had in starting her career, and she hopes to offer this unique experience to more students."

As a result of her experiences competing in the MSDC, Christine became actively involved in CSWEA. She attributes this involvement with leading her to her first full-time job with Black & Veatch, who has been very supportive of her continued participation in CSWEA. Because of her experience with the MSDC and the encouragement of Black & Veatch, Christine has given two professional technical presentations including one at WEFTEC. Christine wants to continue giving professional presentations and credits the MSDC for giving her the confidence and experience to do so.

Christine is appreciative of the role that the MSDC and CSWEA have had in starting her career, and she hopes to offer this unique experience to more students. Christine is currently the MSDC co-chair, where she focuses on outreach to expand the MSDC to new universities and surrounding states. She is proud of the continued growth of the competition, which had 11 teams from three MAs and two countries compete in 2023, and Christine is excited to see where it is in a few years. Christine also volunteers on the Wisconsin Section Young Professional committee. CS

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NEW MINNESOTA LAW
EXPANDS DISCHARGE NOTIFICATION OBLIGATIONS FOR PUBLICLY OWNED TREATMENT WORKS

By Thomas Braun, Partner, Stoel Rives LLP

The Minnesota Legislature ended the 2023 session having passed numerous bills impacting both private companies and public entities, including publicly owned treatment works (POTWs), and public or private owners of domestic sewer systems. HF 2310, the environmental, natural resources, climate and energy finance and policy bill that was signed by Governor Tim Walz on May 24, includes new notification requirements for POTWs, and expands notification obligations necessary for POTWs and public private owners of domestic sewer systems to remain in compliance.

Minnesota Statute Section 115.061 has long provided that it is the duty of every person to notify the Minnesota Pollution Control Agency (MPCA) immediately of a discharge, accidental or otherwise, of material under its control which, if not recovered, may pollute the waters of the state. These responsible persons must recover as rapidly and as thoroughly as possible the material and take immediately such other action as may be reasonably possible to minimize or abate pollution of waters of the state caused thereby. Discharges of five gallons or less of petroleum do not require notification.

The provisions of Minnesota Statute Section 115.061 may be enforced by any one or any combination of the following: criminal prosecution; action to recover civil penalties; injunction; action to compel performance; or other appropriate action. With respect to criminal prosecution, Minnesota Statute Section 115.071 states that any person who willfully or negligently violates the duty to notify "shall upon conviction be guilty of a misdemeanor." Regarding penalties, any person who violates the duty to notify shall forfeit and pay to the state a civil penalty, in an amount to be determined by the court, of not more than $10,000 per day of violation except that if the violation relates to hazardous waste the person shall forfeit and pay to the state a penalty, in an amount to be determined by the court, of not more than $25,000 per day of violation. Alternatively, under Minnesota Statute Section 116.072, the MPCA commissioner may issue an order assessing a penalty of up to $20,000 for violations identified during an inspection or other compliance review.

HF 2310 expands the requirements for POTWs and public or private owners of domestic sewer systems. Now, promptly after notifying MPCA of a discharge, a POTW or an owner of a public or private domestic sewer system also must provide notice to the potentially impacted public and to any downstream drinking water facility that may be impacted by the discharge. Notice to the public and to any drinking water facility must be made using the most efficient communications system available to the facility owner, such as in person or by telephone call, radio, social media, web page, or another expedited form. In addition, signage must be posted at all impacted public use areas within the same jurisdiction or notification must

Click HERE to return to Table of Contents

"How the new requirements are interpreted by both the **MPCA** and the **courts** will go a long way in determining the scope of the impacts on **POTWs** and **public and private owners** of **domestic sewer systems**."

be provided to the entity that has jurisdiction over any impacted public use areas. The date and time of the discharge, a description of the material released, a warning of the potential public health risk and the permittee's contact information must also be included in the notice.

HF 2310 directs MPCA to provide guidance that includes but is not limited to methods and protocols for providing timely notice of a discharge. The process by which MPCA prepares the guidance may include opportunities for the regulated community to participate, as MPCA often requests comments from the regulated community and other stakeholders. MPCA generally asks the regulated community for its opinion on the scope of the guidance, whether it provides sufficient clarification of the new requirements, and if the document should be supplemented with any additional information.

How the new requirements are interpreted by both the MPCA and the courts will go a long way in determining the scope of the impacts on POTWs and public and private owners of domestic sewer systems. Past court proceedings do indicate times whereby the Minnesota courts have applied Minnesota Statute Section 115.061 broadly, and violations of the statute can result in costly penalties and have far reaching consequences, up to and including personal liability for corporate officers in certain circumstances. As a result, POTWs may wish to consult legal counsel regarding how best to proceed given the new notification requirements.

Thomas Braun is a Partner at Stoel Rives LLP in Minneapolis, MN. His practice includes advising public and private entities across the country on environmental compliance and enforcement matters. He can be reached at thomas.braun@stoel.com. CS

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UNIVERSIDAD DE COSTA RICA

On April 10, 2023, a team consisting of five students from the University of Costa Rica competed in the CSWEA Midwest Student Design Competition (MSDC) and won within the Global Water Stewardship (GWS) International Category. The competition took place at the Monona Terrace Convention Center in Madison, WI. The objective of the GWS category was for international teams to design and propose a wastewater recovery and treatment system for Bijagua, Upala, Costa Rica.

The team members included Sofia Abarca Rodríguez, Mauricio Alpizar Murillo, and Alejandro Rodríguez Vargas, who are seniors in civil engineering, as well as Madison Arce Jiménez, a senior in architecture. Dr. Erick Centeno Mora and Ing. Paola Vidal Rivera, both professors at the University of Costa Rica, served as engineering advisors for the project. Roberto Roldán López, who was part of the competition team, collaborated in the selection of the treatment train and the design of the wastewater collection system and the wetlands.

Team Members: Roberto Roldan Lopez, Sofia Abarca Rodriguez, Alejandro Rodriguez Vargas, Mauricio Alpizar Murillo, and Madison Arce Jimenez.

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PROBLEM STATEMENT

In Bijagua, as well as in 85% of the Costa Rican territory, there is a predominance of septic tanks as a wastewater treatment system. This type of treatment system can pose a long-term problem due to population growth and tourism, which lead to an increase in the number of houses and lodging facilities, resulting in a reduction in the available space for these types of systems.

Another issue with septic tank use is the water table level. According to regulations, the water table should be at least 1.8 meters (m) away from the wastewater treatment system; however, in many parts of the country, this requirement is not met. When the water table level is high, it causes significant contamination of potential sources of drinking water and reduces soil infiltration capacity, leading to problems in the evacuation systems.

The septic tank is a treatment system in which the responsibility for maintenance lies entirely with the user. This system requires at least two preventive maintenance checks per year to function properly, but in most cases, this maintenance is neglected due to lack of information. This is a serious problem because users are often unaware of how the septic tank functions, leading to disruptions in its operation and consequently a decrease in organic matter removal efficiency.

The place of study is in the province of Alajuela, in the northern area of Costa Rica, in Figure 1, a map displaying the location of Bijagua can be seen. Bijagua is one of the districts that belongs to the canton of Upala. The district has a population of 5365 inhabitants, which corresponds to 1365 households and 260 commercial establishments receiving water services from the local ASADA. The average consumption of drinking water per household is 29 m^3, while commercial shops consume an average of 40 m^3.

The average temperature is 23.1 °C, and the average annual precipitation is 3000 mm, with two distinct climatic seasons:

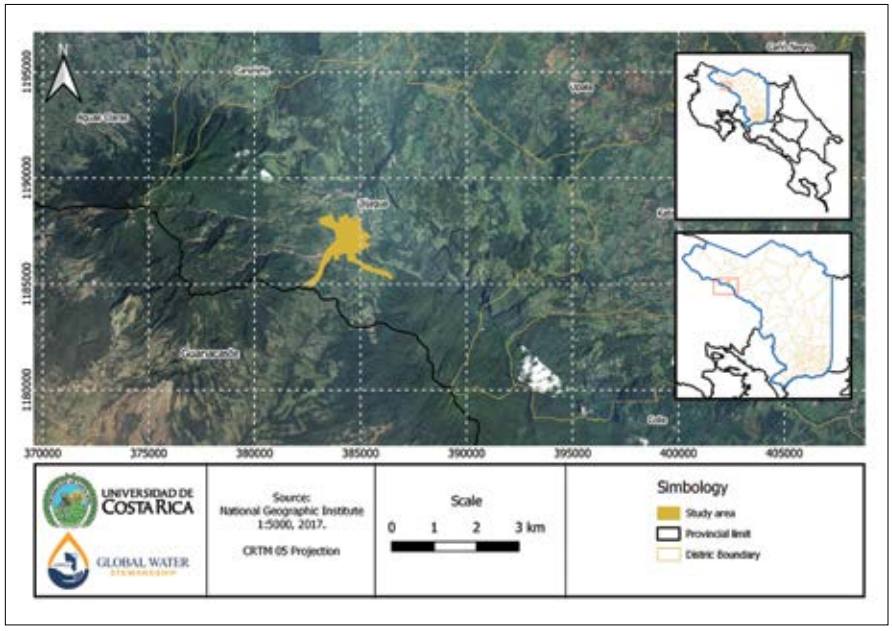

Figure 1: Location of the study area.

the dry season from December to May and the rainy season from June to November. During the dry season, there are few rains, and it experiences the highest temperatures of the year. Conversely, the rainy season has sunny mornings but rainy afternoons. This region is affected by tropical waves, tropical storms, and hurricanes throughout the rainy season.

OBJECTIVE

The objective of this project was to design a wastewater recovery and treatment center for the community of Bijagua that allows environmental education for the population, adapts to the tourism context of the area, and successfully meets the physicochemical parameters established by Global Water Stewardship (GWS).

LIMITATIONS

There are some limitations to design the treatment plant and the recovery system, like it is necessary to achieve low operational and maintenance costs due to the socioeconomic conditions of the area. The fee per household needs to be below ₡10,000 ($19). The community doesn't know much about wastewater treatment systems, including the ASADA, as they primarily focus on administering the drinking water system for Bijagua.

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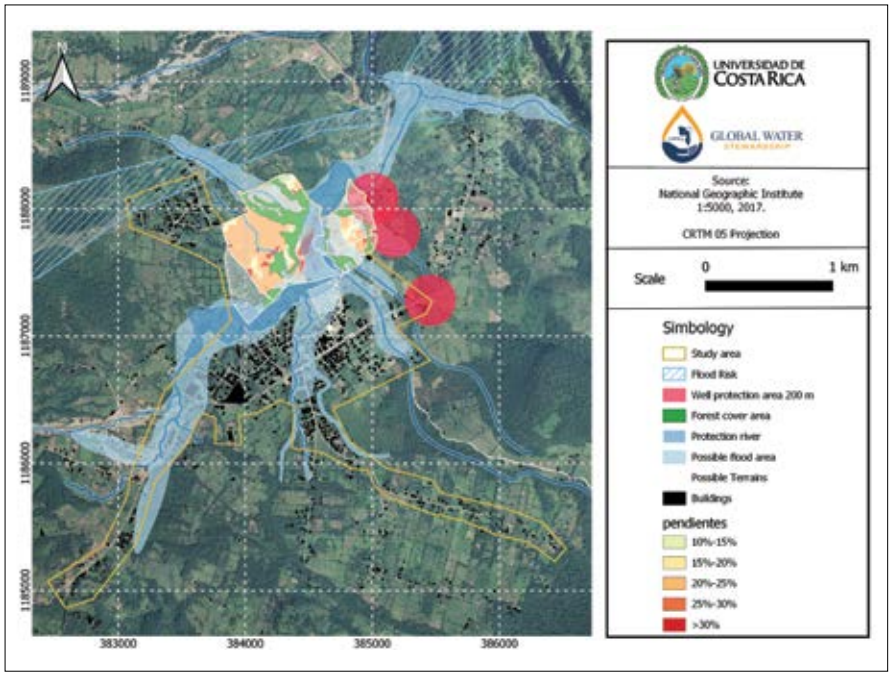


Figure 2: Superposition of variables.

Also, there is no precise information of population because the last official census in Costa Rica was carried out in 2011. This place is one of the rainiest areas in Costa Rica, making it highly susceptible to floods that could affect the future plant. It has a high groundwater level and wells in the possible construction areas.

SITE SELECTION

To generate the Characterization of the zone and site selection, we use the most important variables that we considered to apply the superposition method and determinate the effective areas to build a treatment plant. We use the potential flood areas, terrain gradients greater than 10%, areas of rivers and wells influence and forest cover area to exclude these sites and construct the treatment plant outside of these vulnerable sectors. The shapes used for the selection of terrain can be observed in Figure 2.

With the superposition analysis carried out, we determined the effective areas where the treatment plant could be built. Based on this, we chose three terrain options, and finally, we selected the lot 2 as the chosen site, due to having the largest effective area, better access conditions, and proximity to the outflow point, as observed in Figure 3. Additionally, we conducted a verification of the site through a field visit, where it was possible to confirm that the selected site satisfactorily complies with the established requirements. We also investigated and found that downstream from the river, there is only one hydroelectric dam, ensuring that the water intakes for the water supply are not at risk.

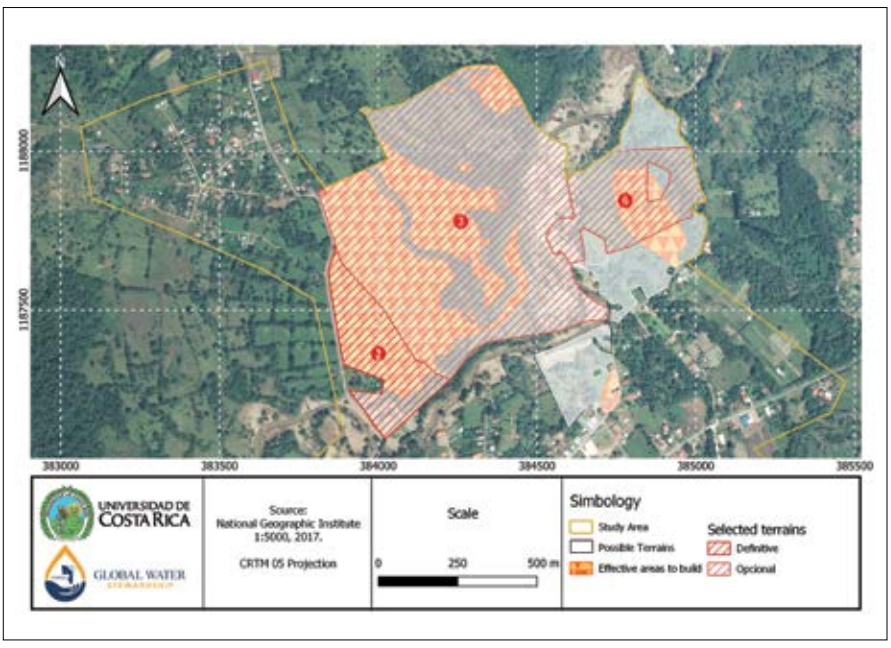


Figure 3: Selection of the site.

DESIGN FLOWS

For population projections, a dynamic model was developed using the Vensim PLE software. The input data for the model includes the birth rate, death rate, and net migration rate for the Bijagua area. These rates were obtained from the two most recent censuses conducted in the country (2000 and 2011). The model was calibrated to align with the population data from the 2000 and 2011 censuses, as well as the population projections generated by the Costa Rican Institute of Statistics and Census until 2025. The input values to the model can be observed in Table 1.

PARAMETER	VALUE
Initial population (Year 2000)	4042
Births rate	0.01
Death rate	0.0055
Net migration rate	0.0057

Table 1: Input values for the population projection model.

Using the projection, we observed that by 2048, the population of Bijagua will be 6579 inhabitants. The design period of 20 years was established due to Costa Rican regulations.

Based on the data provided by ASADA Bijagua (the entity in charge of the Bijagua aqueduct), an average monthly total consumption of 38335 m^3/d was obtained.

Click HERE to return to Table of Contents

Considering the current population of 5927 inhabitants, this results in a daily allocation of 0.212 m^3/hab/d. Calculating for a 20% exceedance probability, a daily allocation of 0.225 m^3/hab/d is obtained. In addition, the infiltration flow rate and the commercial allocation provided by GWS were considered, along with an analysis of tourism data in the area, from which an allocation for tourists was calculated. These data can be seen in Table 2. A return factor of 0.8 was considered for the design flow.

PROCESS SELECTION

For the selection of the treatment system for the Bijagua community, a decision matrix was developed, considering the most important aspects for a country like Costa Rica, regarding the economic aspect, maintenance, and closure of cycles in the generation of by-products within the treatment plant. As part of the economic aspect, the option with a low cost in terms of initial investment, simplified operation, and low energy consumption was considered. A decision matrix was created to analyze the different treatment options that were considered suitable for the site and the initial conditions stated. As Costa Rica is a developing country, the economic factor carries the most weight in this decision matrix, favoring technology that represents reduced construction, operation, and maintenance costs. The three treatment methodologies included in the decision matrix consisted of a UASB reactor plus a wetland, a facultative pond plus a wetland, and finally a UASB reactor plus a trickling filter.

According to the weights assigned in the matrix, the highest score was given to the combination of UASB reactor plus wetland. This treatment combination is considered to provide an economical option for the community since it does not represent such a high initial cost compared to other methodologies, in addition to being easy to operate and having reduced maintenance, resulting in low associated costs. Furthermore, the UASB reactor is a proven and robust technology widely used in Latin American countries such as Brazil, Colombia, Peru, among others. With this technology, there is a low environmental impact, as it even allows the utilization and, therefore, the closure of cycles of practically all the generated by-products. An important aspect that was considered was redundancy, a technology that allows maintenance to be provided to the units without completely shutting down the treatment plant.

PARAMETERS	VALUE	UNITS
Population by year 2048	6579	*inhabitants*
Population allocation	0.225	*m^3/hab/d*
Population flow rate	1480	*m^3/d*
Projected businesses in 2048	319	*businesses*
Potable water allocation for businesses	40	*m^3/mounth/businesses*
Flow rate of businesses	418	*m^3/d*
Tourists in the year 2048	669	*tourist/d*
Potable water allocation for tourist	0.22	*m^3/tourist/d*
Flow rate of tourists	147	*m^3/d*
Infiltration	0.25	*l/s/km*
Length of sanitary sewer	9.6	*km*
Infiltration flow rate	207	*m^3/d*
Maximum Flow Rate	3245	*m^3/d*
Design flow rate	1803	*m^3/d*

Table 2: Data used to calculate the design flow rate.

DESIGN OF TREATMENT SYSTEM

Figure 4 presents the proposed treatment train, which consists of three treatment phases, as well as the utilization of by-products for closing loops and promoting the circular economy. Each section of the treatment train will be explained in detail in the following sections.

Pretreatment

The treatment train begins with pretreatment, which consists of a phase where the water is conditioned for better efficiency in biological treatment and to prevent damage to equipment or units. The first treatment point for the wastewater is the screens, which will have a bar spacing of 15mm for coarse solids and 6mm for fine solids, both placed at a 60° angle to the flow direction. This screen system will be made of stainless steel and will have drainage trays for solids that are periodically removed during maintenance, dried, and disposed of in a sanitary landfill.

To remove solids finer than 6 mm, the installation of two parallel grit chambers is proposed. This allows for the removal of fine particles at a specific sedimentation rate suitable for the system. These units aim to remove particles in the range of 0.2 mm to 6 mm, which can damage pumping equipment, cause abrasion, or overload subsequent treatment systems. The design process for these units involves determining the sedimentation rate, which, once calculated for the critical particle size of 0.2 mm, is used to determine the cross-sectional area of the structure. The length, width, and depth are determined based on typical length-to-width ratios used for grit chambers or particle sedimentation systems, which should be in the range of 3 to 20. Each grit chamber will have a width of 0.85 m, a length of 12.2 m and a depth of 0.59 m.

Upflow Anaerobic Sludge Blanket Reactor, Biogas System, and Sludge Treatment

After pretreatment, the wastewater enters the first biological treatment unit consisting of two parallel Upflow Anaerobic Sludge Blanket (UASB) reactors. A UASB reactor is used for the removal of organic matter present in the wastewater. Its operating principle involves the upward flow being forced to pass through a blanket of anaerobic sludge, where the bacteria present in the sludge decomposes the organic matter in the absence of oxygen. The UASB reactor consists of a sedimentation zone and an anaerobic digestion zone. In the sedimentation zone, denser particles separate and accumulate at the bottom of the reactor, forming a sludge layer, which acts as a support medium for the anaerobic bacteria that form an anaerobic sludge blanket in the digestion zone. As the wastewater flows through the sludge blanket, the anaerobic bacteria decompose the organic matter and convert it into biogas (mainly methane and carbon dioxide) and stable end products such as treated water and sludge.

Based on experience with this technology in various countries, the hydraulic retention time should be around 10 hours, which, along with the design flow rate of the plant, is used to determine the required final volume, which in this case is 751 m^3. A liquid depth of 5 m, a length of 21 m, and a width of 9 m are proposed, with these dimensions divided into two parallel units.

The selection of a UASB reactor as the treatment system offers several advantages, including high efficiency in contaminant removal from water, low sludge production compared to other treatment systems, low energy consumption due to the anaerobic process, resistance to hydraulic shocks and pollutants, and a smaller footprint. Additionally, for a tropical climate like Costa Rica, this treatment technology represents one of the best options for treating ordinary wastewater.

For sludge treatment, it will be extracted from the UASB reactor once a certain thickness and quality of accumulated sludge are observed. The sludge will be transferred to a drying bed, where the leachate generated will be returned to the beginning of the plant for treatment. Then, the sludge will be transferred to a sanitization bed, which is necessary for safety in its reuse. Sanitization will be carried out using a system of buried pipes that transport hot water, heated by a boiler that utilizes biogas generated in the reactor as a heat source. The treated sludge will be reused in the community as fertilizer.

As mentioned earlier, the biogas generated in the reactor must be properly treated for reuse or release. Firstly, the biogas is passed through a water seal to prevent it from returning to the reactor, then it goes through a condenser that removes moisture from the gas, and finally, it is stored in several specialized containers. From there, the stored biogas will be used for two purposes: heating the boiler that supplies hot water to the sludge sanitization bed or, alternatively, passing through a compressor to be packaged and delivered to the community as cooking gas. The expected daily biogas production is estimated to reach 192 m^3/day, and if there is an excess, it will be released in a controlled manner through burning, converting methane into carbon dioxide, which is less polluting.

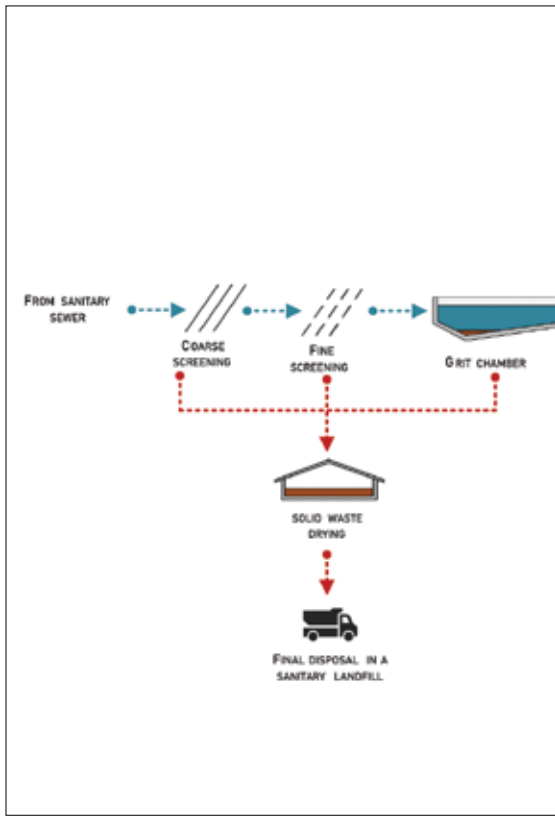
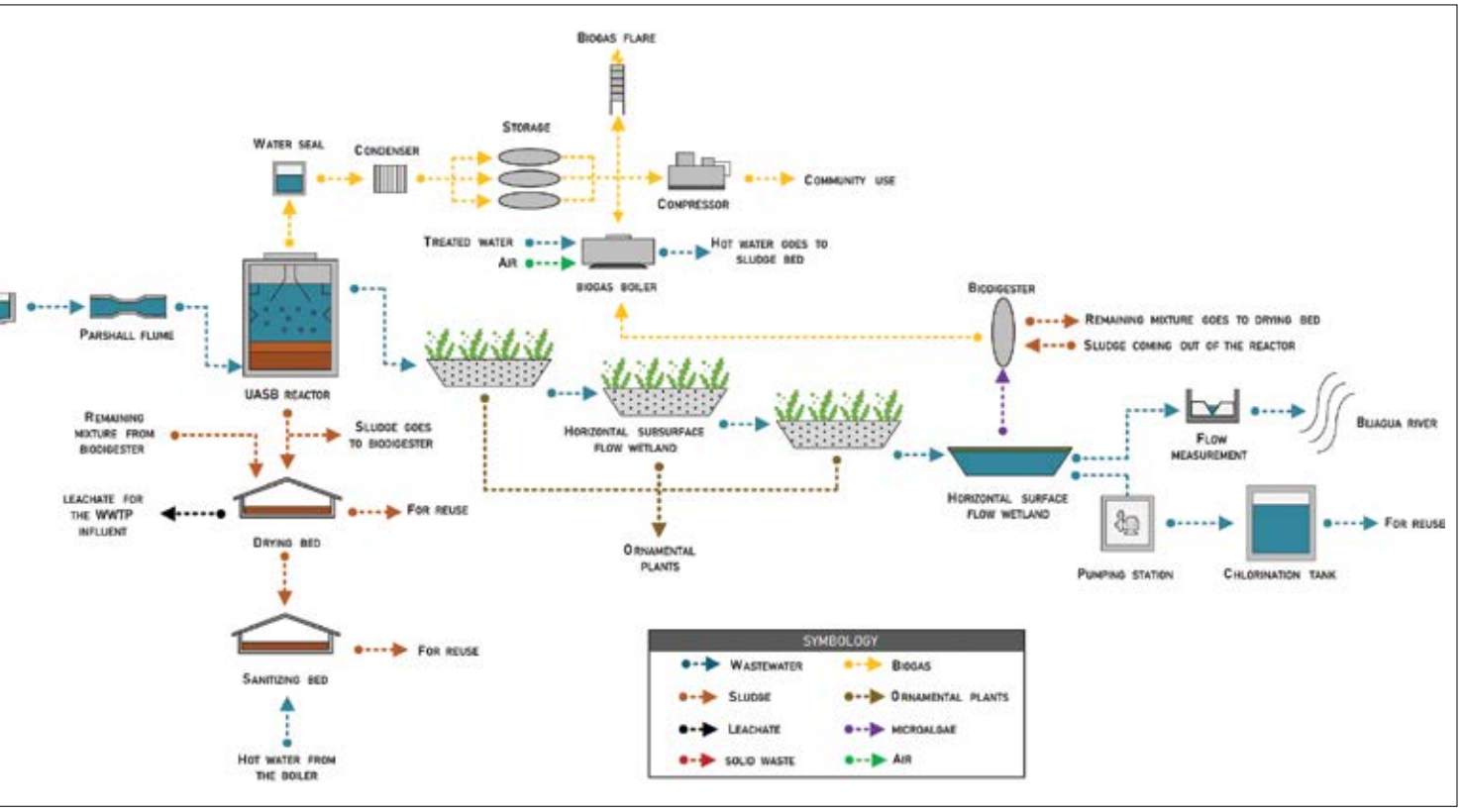


Figure 4: Treatment train.

Subsurface Wetlands

The UASB reactor is a treatment technology that alone does not allow compliance with the discharge limits defined in current regulations. For this reason, the option was chosen to complement it with a horizontal subsurface flow wetland, which was designed using the commonly used tool for wetland design, the first-order analysis. This analysis involves gathering important data such as the temperature of the area, inlet and outlet concentrations, and different reaction constants specific to the model. From these variables, the hydraulic retention time of the wetland is calculated, which is then used to verify the hydraulic loading rate, which must fall within common limits for this type of wetland. Finally, the required area for the wetland is determined, which in this case is 8022 m^2. The total number of square meters was divided into three wetland beds, which will be arranged in terrace form.

Click HERE to return to Table of Contents



Surface Wetland with Microalgae

Additionally, a surface wetland is proposed with the purpose of showcasing the treated water to visitors. Moreover, we aim to eliminate nutrients such as nitrogen and phosphorus by using microalgae that will form on the surface of the wetland and will be periodically collected to be transferred to a biodigester. To facilitate the collection process, a small spillway has been designed to allow only a thin layer of microalgae-rich water to pass through. Along with the sludge extracted from the reactor, the microalgae will produce additional biogas, which will be stored for the aforementioned uses.

To estimate the production of microalgae, we used the Monod kinetic model. We analyzed three of the most abundant species of microalgae in wastewater, namely Chlorella, Spirulina, and Nostoc. We calculated the theoretical growth rate for all three species and used the critical value of 0.69 for design purposes. We calculated the mass of microalgae that can be extracted per day, which can reach up to 20 kg. Based on this parameter, we estimated the biogas production for a mixture of 80% sludge and 20% microalgae, resulting in 35 m^3 of biogas every 20 days. Using this information, we determined the diameter and length of the tubular biodigester that we plan to use.

Finally, using the exponential model for nutrient removal, considering that the surface wetland was designed for a hydraulic retention time of one day, we estimated that with the inclusion of microalgae in the wetland, an additional 20% of nutrients could be eliminated. This is of great importance because the treated water will be discharged into the effluent with a low concentration of nutrients, after passing through the subsurface and surface wetlands, thereby preventing excessive eutrophication of the river and reservoir downstream. The input and output values of nutrients can be observed in the mass balance charts. Once the mixture of microalgae and sludge is used, the digestate can be employed as fertilizer.

Outflow Channels

At the end of the treatment system, the water passes through a weir as a flow meter. Then, the water is discharged into the Bijagua River through a trapezoidal channel designed for a 2% slope, with a Manning coefficient of 0.014 for concrete and the design flow rate. Based on this, the dimensions obtained are 0.5 m in height, 1 m in width at the smaller base, and 2 m in width at the larger base, which ensures a velocity of 4 m/s, resulting in an acceptable value for discharging into the river. A portion of the water is pumped to a chlorination tank for reuse in irrigation or sanitation services.

Mass Balance

The mass balance indicates the behavior that contaminants will undergo along the treatment line based on the removal efficiencies of each unit. The concentration values of the main parameters that describe the degree of contamination of the wastewater were used for this mass balance. These values were provided by GWS and are shown in Table 3.

PARAMETER	VALUE
BOD (mg/l)	280
COD (mg/l)	550
TSS (mg/l)	220
Total Nitrogen (mg/l)	50
Total Phosphorus (mg/l)	20

Table 3: Input values for the mass balance.

Figure 5: Sanitary Sewer System.

For the pretreatment stage, a removal efficiency of 0% was adopted for all analyzed parameters. For the UASB reactor, 65% efficiency was considered for BOD, 60% for COD, 75% for TSS, 20% for nitrogen, and 10% for phosphorus removal. For the horizontal subsurface flow wetland, an efficiency of 80% was adopted for BOD removal, 75% for COD, 87% for TSS, 50% for nitrogen, and 40% for phosphorus. These values were extracted from Sperling, 2007. Finally, the surface flow wetland exhibits a removal efficiency of 20% for nitrogen and phosphorus. The following graphs show the behaviors of different parameters along the treatment line, as well as their comparison with the current regulations regarding the maximum allowable discharge limits.

Sanitary Sewer System

To design the sanitary sewer system was used the EPASWN software, and all the guidelines described in the Costa Rican regulations were followed. To obtain the design flow rates, the sewer system was laid out, and nodes were distributed throughout the area, which are the locations where the manholes will be placed, as seen on Figure 5.

To calculate the flow rate for each node was used the projected population for the year 2048. Using the building layer, the tributary areas for each node were determined, and based on the building density ratio between the tributary area of the node and the total area of the coverage zone, the contribution of flow rate for each node was calculated. By using these design flow rates and creating an elevation layer, from which all relevant elevation data was extracted and input into EPASWN, the sanitary sewer system was designed. In Table 4, observe the data of the sanitary sewer system.

Main Pipeline (200 mm)	9488.4 m
Secondary Pipeline (150 mm)	9686.5 m
Manholes	196.0
Pumps	3.0
Pumping Length	445.0 m
Total Dinamic Head	9.5 m

Table 4: Data of the sanitary sewer.

In Figure 6, the layout of the sanitary sewer system can be observed, for which the digital elevation model and the street layer were used to pass through the optimal sectors, taking advantage of gravity flow and avoiding pumping. The diameters were designed using EPASWN and adjusted to comply with

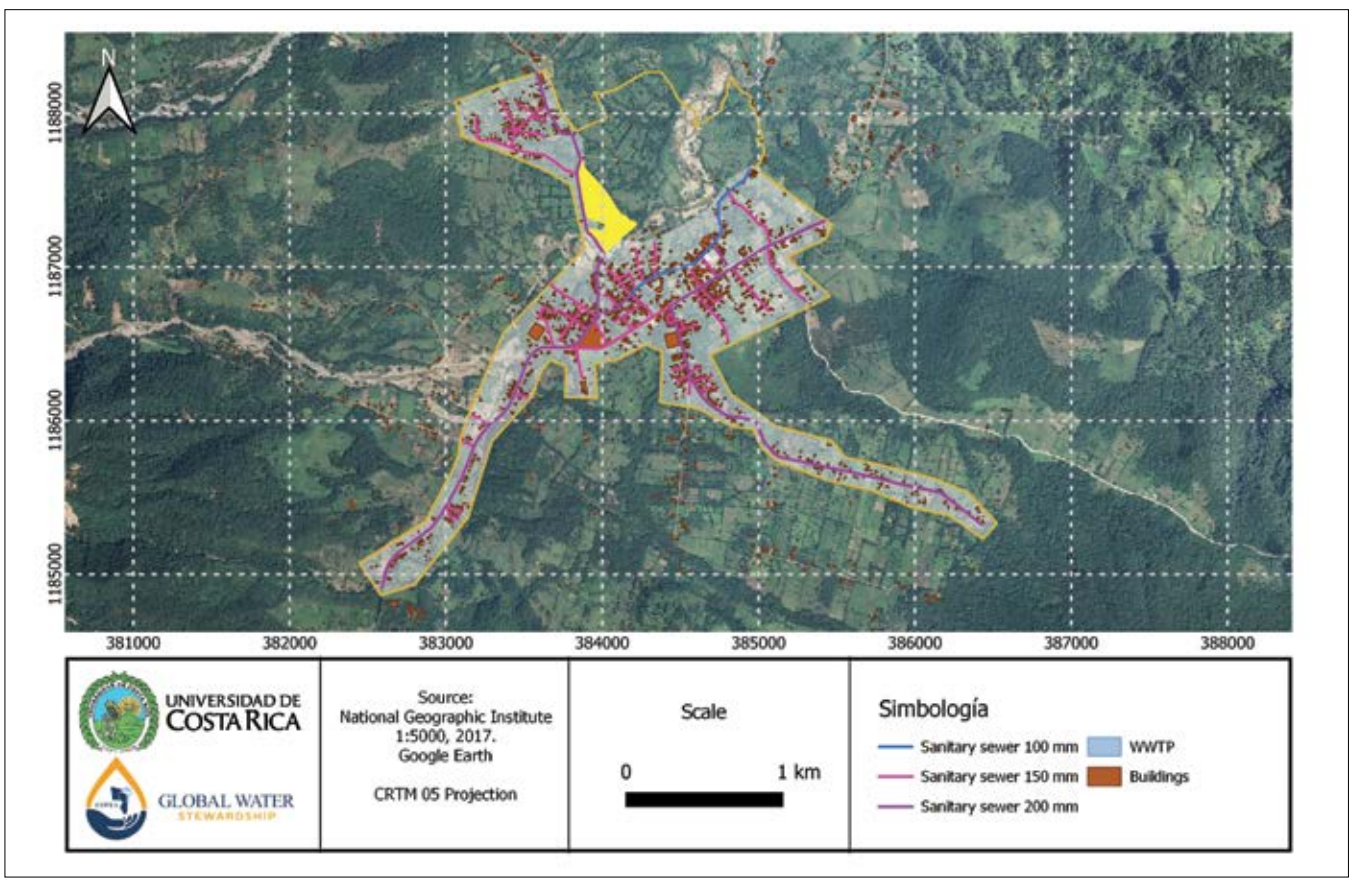


Figure 6: Sanitary Sewer System.

Click HERE to return to Table of Contents

Costa Rican regulations, so that the pumping line, shown in blue in Figure 6, has a diameter of 100 mm, the main collectors have a diameter of 200 mm, and the remaining sections have a diameter of 100 mm.

Finally, Figure 7 shows the profile of the pumping line and the profile of the gravity flow.

Landscape Design

Bijagua is an attractive place f or tourists due to its proximity to Río Celeste and Volcán Tenorio. The design of the treatment plant with the wetlands has become an opportunity to create a space for the community to enjoy weekends and break away from the traditional perception of treatment plants as unpleasant locations with foul odors. For the landscape design, the research find that the tapirs are a symbol for the Upala community. So, for the shape of the wetlands, it uses the white shapes that the young tapirs have around their body.

Those are the larger areas, while the smaller ones consist of clusters of ornamental vegetation. The wetlands incorporate ornamental plants, which could be used to generate economic

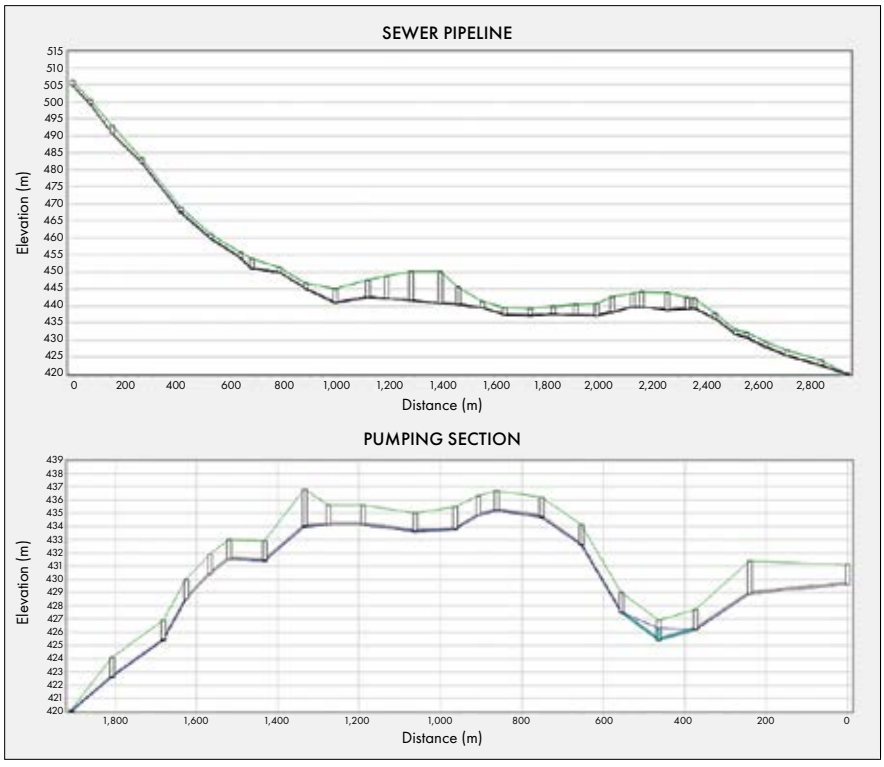


Figure 7: Pumping and Sewer Section.

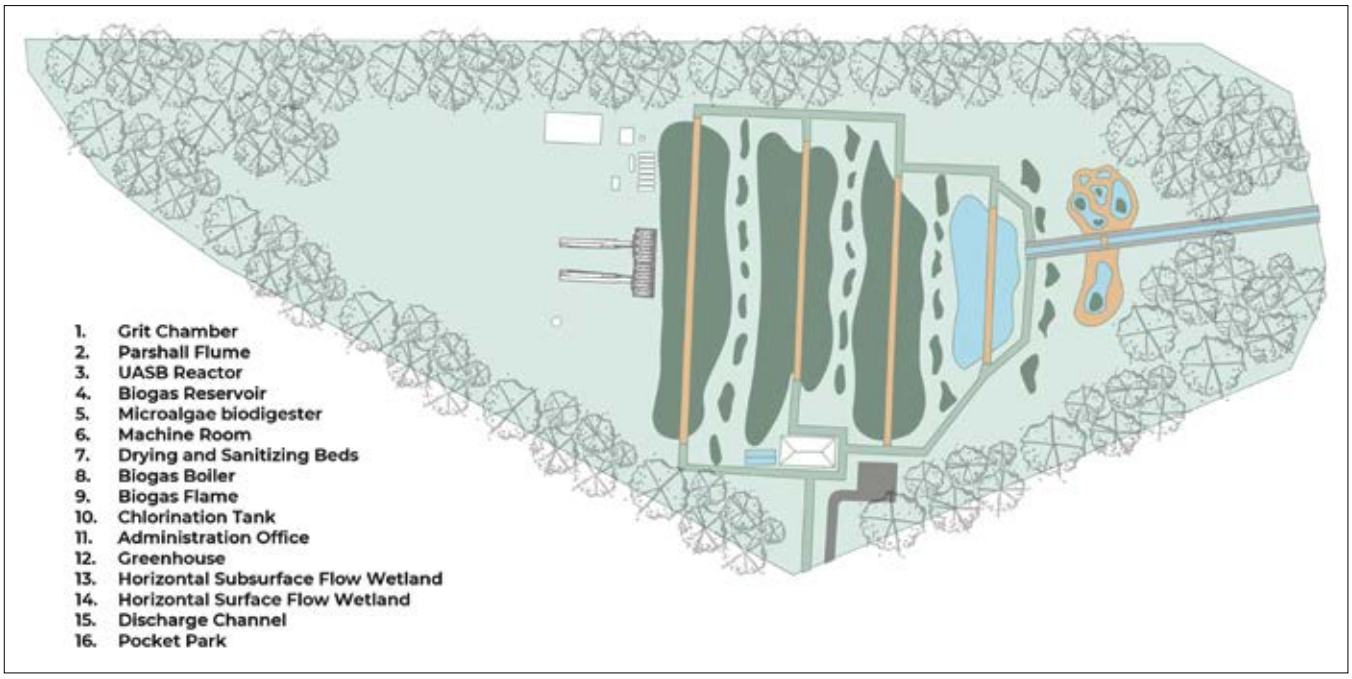


Figure 8: Site planning.

benefits by selling flowers, in addition to serving as a landscaping element. It is worth noting that ornamental plants have been studied and shown to be effective for wetland treatment, as demonstrated in a study conducted in Mexico. Among the plants that will be used are heliconias, iris, ave del paraíso, cala, lirios, anturios, and Bijagua Plant. These ornamental plants will be complemented with traditional wastewater treatment plants such as Papiro, Esparto, Junco, and Carrizo, so that the abundant roots of these species can contribute to the formation of a biofilm of microorganisms to enhance wastewater treatment. All the selected plants are native to the area, according to information found on the website of the INBioparque in Costa Rica.

The plant consists of three subsurface flow wetlands and one surface wetland for the cultivation of microalgae. In the middle of the discharge channel, there is a pocket park designed for educational purposes, demonstrating how the water enters and exits the system. Additionally, there is a greenhouse to showcase how the dried sludge can be utilized in plant fields. The wetlands are adorned with bridges, offering visitors the opportunity to stroll through the flower fields and enjoy the scenery.

The administration office is inspired by the traditional houses of the northwestern

Figure 9: Aerial view of site design.

Click HERE to return to Table of Contents

Figure 10: Wetlands.

parts of Costa Rica, which feature wooden walls and tiled roofs. It is elevated from the ground to prevent potential flooding in the future. This building includes a laboratory, as required by law, a multipurpose room for community education on the wastewater treatment system, a surveillance room, an administration office, and visitor restrooms.

The pocket park features pools and decks for walking and enjoying family time. It includes a monument dedicated to tapirs, which hold significant importance for the locals. The overall design aims to encourage visitors to walk throughout the plant and observe the system. It incorporates local plants and trees, showcasing the potential to become a tourist attraction in the area.

Figure 11: Pocket park and administration.

COST ANALYSIS

The following tables present the breakdown of costs for construction, operation, and sanitary sewerage.

CONSTRUCTION COST	US DOLLARS	COLONES
Pretreatment and UASB Reactor	$82,335	CRC 49,565,500
Plants and Wetlands	$348,181.64	CRC 209,605,350
Induction Center and Drying beds	$36,060	CRC 21,708,000
Fencing	$7,063	CRC 4,252,030
Parking, pipelines, walkways and valves	$56,800	CRC 34,193,300
Biogas recovery system	$11,989	CRC 7,217,378
Total cost	$542,428	CRC 326,541,558
Terrain cost	$35,745	CRC 21,518,500

Table 5: Construction costs.

ANNUAL OPERATIVE COST	US DOLLARS	COLONES
Energy Consumption (pump)	$363	CRC 218,400
Workers	$89,364	CRC 53,797,040
Public Services	$1,595	CRC 960,000
Truck Distribution of dried sludge	$2,990	CRC 1,800,000
Economic Benefit	$9,132	CRC 5,594.004
Total cost	$103,444.00	CRC 63,334,024
Housing rate	$5.60	CRC 3,355

Table 6: Annual Operative Cost.

SANITARY SEWER COSTS	US DOLLARS	COLONES
Main Pipeline (200mm)	$157,613.47	CRC 94,883,310
Secondary Pipeline (150mm)	$96,546.15	CRC 58,118,976
House Conections	$257,475.08	CRC 155,000,000
Manholes	$309,302.33	CRC 186,200,000
Excavations	$5,064,447.66	CRC 3,048,797,493
Pumps	$15,326.81	CRC 9,226,740
Pressurize Pipelines (100mm)	$2,868.48	CRC 1,726,825
Total Cost	$5,903,576.98	CRC 3,553,953,344

Table 7: Sanitary sewer costs.

TOTAL	US DOLLARS	COLONES
Construction	$542,428	CRC 326,541,558
Terrain	$35,745	CRC 21,518,500
Sanitary Sewer	$5,903,576.98	CRC 3,553,953,344
Operative	$103,444,000	CRC 63,334,024
Total	$6,488,414.420	CRC 3,968,767,426

Table 8: Summary of the cost analysis.

ACKNOWLEDGMENTS

Erick Centeno Mora, PhD, UCR
Paola Vidal Rivera, CE, UCR
Roberto Roldán Lopéz, Student CE, UCR
Mohammed Haque, PE, MBA, Global Water Stewardship
Joe Lapastora, EIT, Co-Chair, Global Water Stewardship

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EPA Issues Next Test Order

Under National Testing Strategy for PFAS Used in Chemical Manufacturing

On August 15, the US Environmental Protection Agency (EPA) issued the third *Toxic Substances Control Act* (TSCA) test order requiring testing on per and polyfluoroalkyl substances (PFAS) under EPA's National PFAS Testing Strategy, the latest action taken under EPA's PFAS Strategic Roadmap to confront contamination from forever chemicals nationwide.

Today's action orders the Chemours Company FC LLC, El du Pont de Nemours and Company, and 3M Company to conduct and submit testing on 2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoyl fluoride (HFPO-DAF), a substance used as a reactant in organic chemical manufacturing. HFPO-DAF is known to be used to make the chemical Hexafluoropropylene Oxide (HFPO) Dimer Acid (CASRN 13252-13-6), also known by the trade name GenX. HFPO-DA is used in the production of nonstick coatings, stain repellent, and other consumer and industrial products and was widely used to replace PFOA. More than 1 million pounds of HFPO-DAF are manufactured each year, according to TSCA Chemical Data Reporting rule reports.

"We still don't know enough about the dangers that many PFAS might pose to human health," said Michal Freedhoff, Assistant Administrator for the Office of Chemical Safety and Pollution Prevention. "We're using all the tools at our disposal to rapidly gather data about these substances so that we can better understand the potential environmental and human health impacts of PFAS and take any necessary steps to address them."

After thoroughly examining existing hazard and exposure data, EPA has concluded that HFPO-DAF may present an unreasonable risk of injury to health or the environment. The potential hazards from exposure to this chemical could include organ damage, including to the eyes and skin, as well as cancer. EPA has also concluded that workers may be exposed to HFPO-DAF. Additionally, EPA's recent proposal to regulate six PFAS in drinking water, including HFPO-DA and its salts, isomers, and derivatives which includes HFPO-DAF, found there was a meaningful opportunity to reduce health risks to people consuming drinking water contaminated by these PFAS. The test order will help EPA better understand the potential hazards and potential exposures associated with HFPO-DAF.

The information EPA receives under this order will not only improve the agency's understanding of human health effects of HFPO-DAF, but also the potential effects of dozens of PFAS that are structurally similar to HFPO-DAF and in the same Testing Strategy category of PFAS, improving the agency's overall data on PFAS.

The companies subject to the test order may either conduct the tests as described in the order, including testing of physical-chemical properties and health effects following inhalation, or provide EPA with existing information they believe EPA did not identify in its search, but which satisfies the order requirements.

EPA encourages companies to jointly conduct testing to avoid unnecessary duplication of tests and will also consider possible combinations of tests that cover all required endpoints to diminish the amount of time, animal subjects and costs required.

> Given the complexity of the testing requirements, a broad spectrum of experts across the agency worked to determine testing methodology and needs and address other details of drafting and issuing an order, such as assessing the economic burden of an order.

The order employs a tiered testing process, as TSCA requires. The results of all the first-tier testing are required to be submitted to EPA within 446 days of the effective date of the order and will inform the decision as to which additional tests are necessary. The order and any data submitted in response to this order will be made publicly available on EPA's website and in the applicable docket on *www.regulations.gov*, subject to confidentiality considerations under TSCA section 14.

PFAS National Testing Strategy

In the National Testing Strategy, EPA assigned PFAS into smaller categories based on similarities in structure, physical-chemical properties, and existing toxicity data. EPA is issuing test orders for PFAS in specific categories that lack toxicity data to inform EPA's understanding of the potential human health effects.

The first test order was for 6:2 fluorotelomer sulfonamide betaine, a PFAS used in commercial firefighting foam. The second was for HFPO, a PFAS used to manufacture plastics. As EPA continues to further develop the Strategy, refine its universe and categorization of PFAS, and consider stakeholder feedback, the Agency also plans to increase the weight it places on the potential for exposures when identifying which specific PFAS to require testing on.

Section 4 Test Orders

Developing section 4 test orders is a complex and resource-intensive process involving many scientific and regulatory considerations. Given the complexity of the testing requirements, a broad spectrum of experts across the agency worked to determine testing methodology and needs and address other details of drafting and issuing an order, such as assessing the economic burden of an order.

Additionally, one order often applies to multiple companies. EPA must identify these companies and their associated points of contact. To improve the transparency of the process, EPA also works to resolve confidential business information claims that could prevent EPA from publicly connecting the company to the chemical substance prior to issuing test orders. CS

EPA Releases Initial Nationwide Monitoring Data on 29 PFAS and Lithium

First of 12 sets of data to be released through 2026, this information further builds upon EPA actions to address PFAS in Drinking Water

On August 17, the US Environmental Protection Agency is releasing the first set of data collected under the fifth Unregulated Contaminant Monitoring Rule (UCMR 5). In the latest action to deliver on EPA's PFAS Strategic Roadmap, UCMR 5 will provide new data that will improve EPA's understanding of the frequency that 29 PFAS and lithium are found in the nation's drinking water systems, and at what levels. The monitoring data on PFAS and lithium will help the agency make determinations about future actions to protect public health under the *Safe Drinking Water Act*. This action advances the Biden-Harris Administration's commitment to combat PFAS pollution and safeguard drinking water for all people.

"PFAS are an urgent public health issue facing people and communities across the nation. The latest science is clear: exposure to certain PFAS, also known as forever chemicals, over long periods of time is linked to significant health risks," said Radhika Fox, Assistant Administrator for Water. "That's why the Biden-Harris Administration is leading a whole-of-government approach to address these harmful chemicals. As part of this commitment, EPA is conducting the most comprehensive monitoring effort for PFAS ever, at every large and midsize public water system in America, and at hundreds small water systems."

The data collected under UCMR 5 will ensure science-based decision-making and help EPA better understand national-level exposure to these 29 PFAS and lithium, and whether they disproportionately impact communities with environmental justice concerns. This initial data release represents approximately 7% of the total results that EPA expects to receive over the next three years. The agency will update the results quarterly and share them with the public in EPA's National Contaminant Occurrence Database (NCOD) until completion of data reporting in 2026. EPA continues to conduct research and monitor advances in techniques that may improve our ability to measure these and other contaminants at even lower levels.

EPA is acting to protect peoples' health from PFAS in drinking water. In March 2023, EPA proposed standards to limit certain PFAS in drinking water. The proposal, if finalized, would allow public water systems to use results from UCMR 5 to meet the rule's initial monitoring requirements and to inform communities of actions that may need to be taken. In the interim period before the PFAS drinking water standard is final, EPA has established Health Advisories for four PFAS included in the UCMR 5. EPA continues to advance the science on the potential health effects of a wide range of PFAS, including many of those monitored for under this program.

EPA is moving forward to expand the investigation and cleanup of PFAS contaminated sites, including by finalizing new safeguards under Superfund to hold polluters accountable for contamination from two widely used PFAS chemicals. The agency also recent issued its third order to require PFAS manufacturers to conduct testing under EPA's National Testing Strategy to help EPA better confront these forever chemicals.

> "EPA is moving forward to expand the investigation and cleanup of PFAS contaminated sites, including by finalizing new safeguards under Superfund to hold polluters accountable for contamination from two widely used PFAS chemicals.

EPA is also deploying an unprecedented $9 billion, included in President Biden's Bipartisan Infrastructure Law, specifically to invest in communities with drinking water impacted by PFAS and other emerging contaminants. This includes $4 billion via the Drinking Water State Revolving Fund (DWSRF) and $5 billion through EPA's "Emerging Contaminants in Small or Disadvantaged Communities" grant program. States, Tribes and communities can further leverage an additional nearly $12 billion in BIL DWSRF funds and billions more in annual SRF funds dedicated to making drinking water safer. These funds will help communities make important investments in solutions to remove PFAS from drinking water.

For more information visit *www.epa.gov/ground-water-and-drinking-water*. CS

A JANSSEN CASE STUDY:
ALASD, MN

Alexandria Lakes Area Sanitary District (ALASD), a regional sanitary sewer district in Minnesota, wanted stainless steel launder covers for their final clarifiers – the problem was nobody was making them.

Not having the covers meant a loss employee's time scrubbing algae from the baffle and weir two to three times a week was consuming too much labor. The algae also complicated downstream water quality. ALASD considered domes, FRP covers, and mechanical scrubbers. In the end, they decided on stainless steel; the material that would last the life of the clarifier, maintain a as new appearance, and (most importantly) prevent algae growth – saving huge amounts of labor as well as reducing downstream treatment costs.

A couple companies were contacted to design and build covers and after a year, no success. Tim Bohmer, President of Municipal Service Co. suggested they ask Janssen Machine Co. to have a look. Following a short tour, Scot Spranger, ALASD Plant Superintendent; Tim Bohmer, and Jerry Janssen of Janssen Machine Co. gathered in the break room to discuss the ideal cover requirements:

Most importantly, keep sunlight off the baffle and weir; Secondly, easy access if maintenance is needed; and lastly, look great. During this discussion Jerry hand sketched a cover design.

"I knew what I was drawing," said Janssen, "not sure if they knew, as my drawings are not great."

A few weeks later a three-cover prototype was presented and a couple months later the full cover systems were installed.

2023 marks four years since the stainless-steel launder covers were installed. When Troy Drews ALASD superintendent was asked recently how they are working, the answer in a word was: "Great!" They still look like new, there are no moving parts to wear out or maintain, and they sit there and continuously inhibit algae growth. They can now go about a month and a half before any attention to the baffle and weir is needed. Any accumulation is more of a biological than algae and simply flakes off when touched. With three patents granted on the design, the covers open super easy and are completely out of the way. CS

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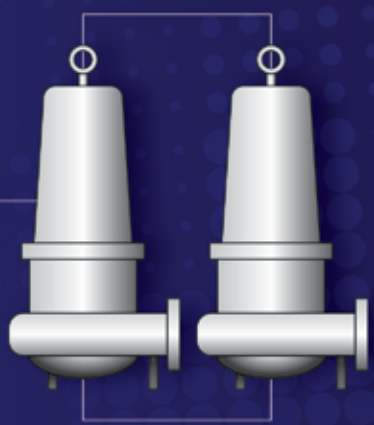

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GLOBAL WATER STEWARDSHIP

GWS Update

August Service Trip Itinerary

By Sarah Guzmán, GWS Co-Chair

As I write this, GWS's annual August Service Trip to Costa Rica is just around the corner. This year, a group of nine volunteers from GWS and five of our Student Design Competition winners from Marquette University are preparing to travel to Costa Rica for a packed week of site visits, data collection, biogarden construction, and some fun exploration. We are also thrilled to work alongside our in-country partners, Laura Torres (AyA), and the University of Costa Rica (UCR) student design competition participants.

Matt Cerven, Claire Connelly, Colton Herbert, Mia Ketelhohn, and Mackenzie Allen, from Marquette University, winners of the 4th Annual Midwest Student Design Competition – GWS Overall Category.

Our journey begins on Sunday, August 20, as we arrive in San José and make our way to Horquetas de Sarapiquí. Horquetas is a breathtaking community located in northern Costa Rica, situated at the border between the provinces of Guanacaste and Alajuela. Horquetas is within the Guanacaste Mountain Range, which stays lush and green year-round. We're excited to explore the local hiking trails and see the natural wonders of Tenorio National Park and Pierella Ecological Garden.

Horquetas de Sarapiquí, a breathtaking community and the location of next year's GWS Student Design Competition.

On Monday, the team will tour the Horquetas community with the ASADA manager, who has gracefully offered to take the group on a tour of the area and provide a chance to explore some of the region's beautiful hiking trails. This is one of the best ways to get everyone in the Pura Vida spirit, exploring the communities with the locals and learning about their culture. After the tour, the team will meet with the Horquetas ASADA to discuss their water system and vision for their future wastewater system. Horquetas will be the site for the 2024 GWS Student Design Competition, and the GWS Community Design Committee

has already received preliminary data from the ASADA and drafted a problem statement, which they will review during the visit. The team will also visit potential sites for the wastewater plant and schools that are options for the biogarden construction next August.

Tuesday takes us to Bijagua, the 2023 Community of Choice for the Student Design Competition. Stunning rainforests surround this central town, and we're excited to explore and get situated. Wednesday will be a perfect day to visit a nearby waterfall or revisit Rio Celeste, but we'll keep that surprise for our next edition.

"It is inspiring to see how all the volunteers from different backgrounds come together to work on this amazing biogarden construction project."

On Thursday, the group will split into two groups. The Marquette students will present their designs to the ASADA Bijagua and AyA members. They will then hand over their final reports, which the ASADA will review and use it to move forward in the next step of implementation of a centralized wastewater system. Following this, the GWS volunteers will head to a school in Bijagua and start the biogarden construction. The volunteers will work with the students at the school to teach them about the biogarden and why it is essential. The school's responsibility is to maintain the biogarden, so it is critical for the teachers and students to be involved in the construction and to learn how to take care of it. It is inspiring to see how all the volunteers from different backgrounds come together to work on this amazing biogarden construction project.

On Friday, which is our last day, the GWS volunteers will finalize the biogarden and will ensure everything is working correctly before returning to San José to catch our weekend flights home.

Months of planning go into making this a successful week. GWS's work in Costa Rica includes promoting sustainable water use and conservation, creating awareness about the importance of water treatment systems, and teaching the communities about sanitation and its importance. The GWS team's visit this summer is an opportunity to continue these efforts and promote sustainable water management practices, sanitation, and water education.

This trip is a testament to GWS's commitment to making a positive impact in Latin America. GWS is continuously expanding its footprint to keep educating and sharing the importance of sanitation and clean water with others. If you or someone you know is interested in supporting GWS's cause, please reach out to either Joe Lapastora or I (Sarah Guzmán) at *chair@globalwaterstewardship.org*.

We are excited to share our experience with you and invite you to get involved in any of the GWS initiatives. Let's continue to promote sanitation, water education and make a positive impact on the communities of Costa Rica. Pura Vida! CS

Bijagua, the 2023 Community of Choice for the Student Design Competition.

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SIWI STOCKHOLM JUNIOR WATER PRIZE

The Stockholm Junior Water Prize (SJWP) is the world's most prestigious youth award for a water-related science project. The prize taps into the unlimited potential of today's high school students as they seek to address current and future water challenges.

WISCONSIN'S 2023 STOCKHOLM JUNIOR WATER PRIZE (SJWP) WINNER

On June 15-18, 2023, Nathan travelled to the Colorado School of Mines in Golden, CO, for the 2023 SJWP national competition. Congratulations, Nathan, and thanks for making Wisconsin proud!

Nathan Steinbach

Grade 12

University School of Milwaukee

River Hills, WI

TITLE

PFAS: Analyzing Multiple Methods of Elimination Through Various Algorithms

PROJECT DESCRIPTION

Per and poly-fluoroalkyl substances (PFAS) pose significant concerns as they contaminate water systems, leading to health risks and environmental issues. These substances are commonly found in various man-made products, necessitating effective methods for their elimination from water. While degradation techniques have been explored in previous research, the selection of the most efficient treatment approach remains unresolved. This study aims to analyze multiple PFAS elimination methods and determine the most effective solution for industrial settings.

To conduct the study, artificially contaminated samples were created by combining tap water with PFAS substance polytetrafluoroethylene (PTFE). Three methods, namely reverse osmosis, deionization, and distillation, were evaluated based on effectiveness (turbidity reduction), efficiency (flow rate per area), and installation cost.

The findings demonstrated that reverse osmosis was the most effective method, eliminating 63.42% of the contaminants. Considering installation cost and efficiency, Reverse Osmosis proved to be the optimal choice for industrial PFAS elimination. Distillation exhibited a high elimination rate of 95.56%, but its limitations in cost and flow rate made it unsuitable for large-scale implementation. Deionization showed poor effectiveness, eliminating only 29.51% of the contaminants.

In conclusion, reverse osmosis consistently emerged as the most effective method for PFAS elimination across various analyses. These results have important implications for water treatment facilities, indicating that Reverse Osmosis filters should be prioritized over other methods. However, further research is necessary to validate these findings and consider additional factors that may impact treatment decisions.

This study contributes to understanding PFAS elimination methods and emphasizes the significance of selecting the most efficient approach for industrial settings. By offering a viable solution with its effectiveness, installation cost, and efficiency, reverse osmosis presents a promising avenue for addressing PFAS contamination in water systems.

BIOGRAPHY

I am Nathan Steinbach, a rising senior at the University School of Milwaukee in River Hills, WI. Inspired by the political significance of PFAS research, I have developed a strong interest in water research. My father's background in stormwater management has further fueled my curiosity in this field. I am committed to expanding my research endeavors and exploring innovative solutions to address the challenges posed by PFAS contamination.

Currently, I am focused on developing a deep learning decision-making algorithm specifically tailored for individual water facilities. I am passionate about environmental advocacy, actively leading the Environment Club and contributing to the Action for Climate Emergency Charter at my school. As the manager of the school garden facilities, I promote sustainable practices. In addition, I am a senior leader in the Student Diversity Leadership Committee (SDLC), fostering inclusivity and acceptance. My enthusiasm extends to sports, where I am a dedicated member of the varsity football team. With a diverse range of interests, my drive is to make meaningful contributions in water research, climate action, inclusivity, and athletics. I look to dive deeper into these many pursuits, specifically my pursuit in water research, at a top-tier research university relating my water interest to public health and sustainability. CS

2023-2024 CSWEA BUYERS' GUIDE

Welcome to the annual Central States Water Buyers' Guide. When making purchasing decisions about products and services in the wastewater industry throughout the Central States region, please support the companies whose advertising makes *Central States Water* possible.

OUR CSWEA BUYERS' GUIDE CONSISTS OF TWO SECTIONS:

1. A categorical listing of products and services, including a list of companies which provide them.
2. An alphabetical listing of the companies appearing in the first section. This listing includes name, contact info, website, and more.

LISTINGS BY CATEGORY

ACOUSTIC INSPECTION
InfoSense, Inc.

ACTIVATED CARBON
CEI Carbon Enterprises Inc.
Unison Solutions, Inc.
Veolia Water Technologies & Solutions
WaterSurplus

ARCHITECTURE
McMahon Associates, Inc.

ASSET MANAGEMENT
AE2S
Bolton & Menk, Inc.
Brown and Caldwell
Burns & McDonnell
CDM Smith
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
M.E. Simpson Co., Inc.
McMahon Associates, Inc.
Ruekert & Mielke, Inc.
Ziegler CAT Power Systems

BIOGAS FLARES
Energenecs

BIOGAS CONDITIONING EQUIPMENT
Unison Solutions, Inc.

CHEMICAL PROCESSING AND FEED SYSTEMS
Boerger, LLC
Energenecs
LAI, Ltd.

CHEMICAL TANK SCALES
Force Flow/Halogen Valve Systems

COATINGS, LINING AND CORROSION CONTROL
Bolton & Menk, Inc.
RELINER/Duran Inc.
SEH

CONTRACTORS
Environmental Dynamics International, Inc.
InfoSense, Inc.

CSO/SSO CONTROLS, WATER RESOURCES, DISTRIBUTION AND COLLECTION
InfoSense, Inc.
Metropolitan Industries, Inc.
Strand Associates, Inc.
TKDA

DATA MANAGEMENT SOFTWARE
Waterly

DIGESTER GAS SAFETY AND GAS STREAM EQUIPMENT
Energenecs
LAI, Ltd.

DESIGN-BUILD SERVICES
Anaergia
Baxter & Woodman, Inc.
Burns & McDonnell
CDM Smith
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
Rice Lake Construction
Ziegler CAT Power Systems

DISINFECTION/EQUIPMENT
Grundfos
LAI, Ltd.
Veolia Water Technologies & Solutions

EDUCATION/TRAINING PROGRAMS
Fehr Graham

ELECTRICAL, INSTRUMENTATION/ CONTROLS/GENERATORS
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Baxter & Woodman, Inc.
Donohue & Associates, Inc.
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Gasvoda & Associates, Inc.
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KROHNE Inc.
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McMahon Associates, Inc.
Metropolitan Industries, Inc.
Starnet Technologies
Ziegler CAT Power Systems

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AECOM
Apex Engineering Group
Barr Engineering Co.
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Bolton & Menk, Inc.
Brown and Caldwell
Burns & McDonnell
CDM Smith
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
Environmental Dynamics International, Inc.
Fehr Graham
Hazen and Sawyer
HR Green, Inc.
McMahon Associates, Inc.
Ruekert & Mielke, Inc.
SEH
Strand Associates, Inc.
TKDA
Trotter and Associates, Inc.
Ziegler CAT Power Systems

ENVIRONMENTAL CONTAMINANT TREATMENT
Barr Engineering Co.
Fehr Graham

FACILITY CONSTRUCTION, REHAB, AND REPAIRS
Rice Lake Construction

FILTER MEDIA
CEI Carbon Enterprises Inc.
WaterSurplus

FILTRATION
AECOM
CEI Carbon Enterprises Inc.
Veolia Water Technologies & Solutions
WaterSurplus

FINE SCREENS/SLIDE GATES
Gasvoda & Associates, Inc.
JDV Equipment Corporation
LAI, Ltd.
LW Allen/Altronex

FIRE HYDRANT FLOW TESTING
M.E. Simpson Co., Inc.

FLOW CONTROL
AMERICAN Flow Control
Electric Pump, Inc.
KROHNE Inc.
Starnet Technologies

FLOW METERS
KROHNE Inc.

GENERAL INDUSTRIAL
Environmental Dynamics International, Inc.

GIS AND MS4
Baxter & Woodman, Inc.
Bolton & Menk, Inc.
McMahon Associates, Inc.
Ruekert & Mielke, Inc.

GREENSAND PLUS
WaterSurplus

GRIT REMOVAL
JDV Equipment Corporation
Lakeside Equipment Corporation

GRIT REMOVAL SYSTEMS/SCREENS
Clark Dietz, Inc.
Electric Pump, Inc.
Energenecs
Gasvoda & Associates, Inc.
JDV Equipment Corporation
LAI, Ltd.

INFRASTRUCTURE REHABILITATION
RELINER/Duran Inc.

INSTRUMENTATION SERVICE AND CALIBRATION
Electric Pump, Inc.
Integrated Process Solutions, Inc.
KROHNE Inc.
LW Allen/Altronex

INTAKE SCREENS
Lakeside Equipment Corporation

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McMahon Associates, Inc.
SEH

LEAK DETECTION
KROHNE Inc.
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MANAGEMENT CONSULTING
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MANHOLE INSPECTION/ LOCATING/MAPPING
Fehr Graham

MANUFACTURER
Anaergia
Boerger, LLC
RELINER/Duran Inc.
Starnet Technologies
WaterSurplus
Ziegler CAT Power Systems

METERS/METER TESTING
M.E. Simpson Co., Inc.
Starnet Technologies

MIXING SYSTEMS
JDV Equipment Corporation

NUTRIENT REMOVAL
Brown and Caldwell
Donohue & Associates, Inc.
Fehr Graham
Gasvoda & Associates, Inc.
LAI, Ltd.
Veolia Water Technologies & Solutions

ODOR CONTROL
AECOM
Brown and Caldwell
Gasvoda & Associates, Inc.
LAI, Ltd.
TKDA

OPERATION SERVICES
Barr Engineering Co.
Baxter & Woodman, Inc.
Environmental Dynamics International, Inc.
Fehr Graham
Waterly
Ziegler CAT Power Systems

PACKAGED TREATMENT PLANTS
Lakeside Equipment Corporation

PFAS TREATMENT
WaterSurplus

PROCESS MECHANICAL
AECOM
Brown and Caldwell
Donohue & Associates, Inc.
JDV Equipment Corporation
McMahon Associates, Inc.
Rice Lake Construction
TKDA

PUBLIC INFORMATION/ COMMUNICATION
AE2S

PUMPS/PUMP SYSTEMS
Barr Engineering Co.
Boerger, LLC
Brown and Caldwell
Electric Pump, Inc.
Gasvoda & Associates, Inc.
Grundfos
Lakeside Equipment Corporation
LW Allen/Altronex
Metropolitan Industries, Inc.
Ruekert & Mielke, Inc.
Starnet Technologies
Strand Associates, Inc.
TKDA

PUMP STATIONS AND METER VAULTS
Clark Dietz, Inc.
Electric Pump, Inc.
LW Allen/Altronex

RATES/FINANCIAL ADVISORY
AE2S

REAL-TIME MONITORING AND CONTROL
Grundfos
KROHNE Inc.
Starnet Technologies
Waterly

REGULATORY COMPLIANCE
AE2S
Barr Engineering Co.
Bolton & Menk, Inc.
Brown and Caldwell
Burns & McDonnell
Clark Dietz, Inc.
Veolia Water Technologies & Solutions
Waterly

RENEWABLE ENERGY SOLUTIONS
Ziegler CAT Power Systems

RESIDUALS/WASTE MANAGEMENT
AECOM
Bolton & Menk, Inc.

SAFETY PRODUCTS
Force Flow/Halogen Valve Systems

SEPTAGE RECEIVING SYSTEM
Lakeside Equipment Corporation

SCADA
AE2S
Baxter & Woodman, Inc.
Burns & McDonnell
CDM Smith
Donohue & Associates, Inc.
Electric Pump, Inc.
Energenecs
Gasvoda & Associates, Inc.
Integrated Process Solutions, Inc.
LW Allen/Altronex
McMahon Associates, Inc.
Metropolitan Industries, Inc.
Ruekert & Mielke, Inc.
Starnet Technologies

SCREENING EQUIPMENT
Energenecs
JDV Equipment Corporation.
LW Allen/Altronex

Storage Tanks/Reservoir Systems
Strand Associates, Inc.

STORMWATER
SEH

STORMWATER DETENTION
Brown and Caldwell
Burns & McDonnell
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Fehr Graham
Ruekert & Mielke, Inc.

STORMWATER TREATMENT AND CONVEYANCE
AE2S
Barr Engineering Co.
Bolton & Menk, Inc.
Crawford, Murphy & Tilly
Grundfos
JDV Equipment Corporation
LW Allen/Altronex
McMahon Associates, Inc.
Ruekert & Mielke, Inc.

SURVEY
TKDA

SYSTEMS INTEGRATOR
Energenecs
Integrated Process Solutions, Inc.

TANK MAINTENANCE AND INSPECTIONS
Pittsburg Tank & Tower Maintenance Co.

ULTRAVIOLET DISENFECTION
Gasvoda & Associates, Inc.
Veolia Water Technologies & Solutions

VALUE ASSESSMENT
Burns & McDonnell

VALVE EXERCISING AND ASSESSMENT
M.E. Simpson Co., Inc.

VALVES
AMERICAN Flow Control
Electric Pump, Inc.
LAI, Ltd.

WATER QUALITY TESTING
Barr Engineering Co.
Clark Dietz, Inc.

WATER STORAGE TANK CONSTRUCTION
AECOM

WATER/WASTEWATER COLLECTION AND DISTRIBUTION SYSTEMS
AE2S
AECOM
Baxter & Woodman, Inc.
Bolton & Menk, Inc.
Brown and Caldwell
Burns & McDonnell
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
Electric Pump, Inc.
Fehr Graham
Integrated Process Solutions, Inc.
LW Allen/Altronex
McMahon Associates, Inc.
RELINER/Duran Inc.
Ziegler CAT Power Systems

WATER/WASTEWATER PUMPS AND SYSTEMS
Barr Engineering Co.
Baxter & Woodman, Inc.
Boerger, LLC
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
Electric Pump, Inc.
Energenecs
Fehr Graham
Gasvoda & Associates, Inc.
Grundfos
KROHNE Inc.
LAI, Ltd.
LW Allen/Altronex
Ruekert & Mielke, Inc.
Starnet Technologies
Ziegler CAT Power Systems

WATER/WASTEWATER STORAGE TANKS
AECOM
Barr Engineering Co.
Baxter & Woodman, Inc.
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Integrated Process Solutions, Inc.
Ruekert & Mielke, Inc.

WATER/WASTEWATER TREATMENT SYSTEMS
AE2S
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Bolton & Menk, Inc.
Brown and Caldwell
Burns & McDonnell
Clark Dietz, Inc.
Crawford, Murphy & Tilly
Donohue & Associates, Inc.
Electric Pump, Inc.
Energenecs
Environmental Dynamics International, Inc.
Fehr Graham
Gasvoda & Associates, Inc.
Grundfos
Integrated Process Solutions, Inc.
LAI, Ltd.
Lakeside Equipment Corporation
McMahon Associates, Inc.
Metropolitan Industries, Inc.
Ruekert & Mielke, Inc.
Starnet Technologies
Strand Associates, Inc.
TKDA
Veolia Water Technologies & Solutions
WaterSurplus
Ziegler CAT Power Systems

Click HERE to return to Table of Contents

LISTINGS BY COMPANY NAME

AE2S
901 East Fish Lake Road, Suite 184
Maple Grove, MN 55369
763-463-5036
abbie.browen@ae2s.com
www.ae2s.com

AECOM
303 East Wacker Drive, Suite 1400
Chicago, IL 60601
312-373-7700 Fax: 312-373-6800
businessinquiry.americas@aecom.com
www.aecom.com

AMERICAN FLOW CONTROL
PO Box 2727
Birmingham, AL 35202
800-326-8051 Fax: 800-610-3569
afcsales@american-usa.com
www.american-usa.com

ANAERGIA
705 Palomar Airport Road, Suite 200
Carlsbad, CA 92011
866-978-9785
www.anaergia.com
info@anaergia.com

APEX ENGINEERING GROUP
3800 8th Street North, Suite 101
St. Cloud, MN 56303
320-640-9720
michael.quamme@apexenggroup.com
www.apexenggroup.com

BARR ENGINEERING CO.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
952-832-2600 Fax: 952-832-2601
www.barr.com

BAXTER & WOODMAN, INC.
8678 Ridgefield Road
Crystal Lake, IL 60012
815-459-1260 Fax: 815-455-0450
dwold@baxterwoodman.com
www.baxterwoodman.com

BOERGER, LLC
2860 Water Tower Place
Chanhassen, MN 55317
612-435-7300 Fax: 612-435-7301
america@boerger.com
www.boerger.com

BOLTON & MENK, INC.
1960 Premier Drive
Mankato, MN 56001
507-625-4171 Fax: 507-625-4177
bmi@bolton-menk.com
www.bolton-menk.com

BROWN AND CALDWELL
30 East 7th Street, Suite 2500
St. Paul, MN 55101
651-298-0710
www.brownandcaldwell.com

BURNS & MCDONNELL
200 West Adams Street, Suite 2700
Chicago, IL 60606
312-223-0920 Fax: 312-223-9446
chi-info@burnsmcd.com
www.burnsmcd.com

CDM SMITH
75 State Street
Boston, MA 02109
617-452-6000 Fax: 617-345-3901
www.cdmsmith.com

CEI CARBON ENTERPRISES INC.
28205 Scippo Creek Road
Circleville, OH 43113
800-344-5770 Fax: 740-420-7732
ryan@ceifiltration.com
www.ceifiltration.com

CLARK DIETZ, INC.
125 West Church Street
Champaign, IL 61820
217-373-8900 Fax: 217-373-8923
www.clarkdietz.com

CRAWFORD, MURPHY & TILLY
2750 West Washington Street
Springfield, IL 62702
844-426-8364
questions@cmtengr.com
www.cmtengr.com

DIXON ENGINEERING
1104 Third Avenue
Lake Odessa, Michigan 48849
800-327-1578 Fax: 616-374-7116
www.dixonengineering.net

DONOHUE & ASSOCIATES, INC.
3311 Weeden Creek Road
Sheboygan, WI 53081
920-208-0296 Fax: 920-208-0402
mgerbitz@donohue-associates.com
www.donohue-associates.com

ELECTRIC PUMP, INC.
4280 East 14th Street
Des Moines, IA 50313
800-383-7867 Fax: 515-265-8079
info@electricpump.com
www.electricpump.com

ENERGENECS
700 East Milan Drive
Saukville, WI 53080
263-377-6360
info@energenics.com
www.energenics.com

ENVIRONMENTAL DYNAMICS INTERNATIONAL, INC.
5601 Paris Road
Columbia, MO 65202
573-474-9456
www.wastewater.com
edi.marketing@environmentaldynamics.com

FEHR GRAHAM
230 Woodlawn Avenue
Aurora, IL 60506
630-897-4651
cdesilva@fehrgraham.com
www.fehrgraham.com

FORCE FLOW/ HALOGEN VALVE SYSTEMS
2430 Stanwell Drive
Concord, CA 94520
925-686-6700
info@forceflow.com
www.forceflowscales.com

GASVODA & ASSOCIATES, INC.
1530 Huntington Drive
Calumet City, IL 60409
708-891-4400
info@gasvoda.com
www.gasvoda.com

GRUNDFOS
902 Koomey Road
Brookshire, TX 77423
281-994-2700
www.grundfos.us

HAZEN AND SAWYER
445 Minnesota Street, Suite 1500
St. Paul, MN 55101
651-256-9534
wmartin@hazenandsawyer.com
www.hazenandsawyer.com

HR GREEN, INC.
2550 University Avenue West, Suite 400N
St. Paul, MN 55114
651-644-4389
info@hrgreen.com
www.hrgreen.com

INFOSENSE, INC.
8116 South Tryon Street, Suite B3-203
Charlotte, NC 28273
704-644-1164
sales@infosense.com
www.infosense.com

INTEGRATED PROCESS SOLUTIONS, INC.
PO Box 26
Fosston, MN 56542
218-435-1703
ips@ipsamerica.biz
www.ipsamerica.biz

JANSSEN MACHINE COMPANY
23062 Highway 34
Barnesville, MN 56514
218-493-4470 Fax: 218-493-4441
janssenmachine@rrt.net
www.janssenmachine.com

JDV EQUIPMENT CORPORATION
104 Fulton Street
Boonton, NJ 07005
973-366-6556
sales@jdvequipment.com
www.jdvequipment.com

KROHNE INC.
55 Cherry Hill Drive
Beverly, MA 01915
800-356-9464
info@krohne.com
us.krohne.com

LAI, LTD.
5400 Newport Dr, Suite 10
Folling Meadows, IL 60008
847-392-0990 Fax: 847-392-1095
ttack@lai-ltd.com
www.lai-.td.com

LAKESIDE EQUIPMENT CORPORATION
1022 East Devon Avenue
Bartlett, IL 60103
630-837-5640 Fax: 630-837-5647
sales@lakeside-equipment.com
www.lakeside-equipment.com

LW ALLEN/ALTRONEX
4633 Tompkins Drive
Madison, WI 53716
800-362-7266 Fax: 608-222-9414
jcook@lwallen.com
www.lwallen.com

M.E. SIMPSON CO., INC.
3406 Enterprise Avenue
Valparaiso, IN 46383
800-255-1521 Fax: 888-531-2444
nataliew@mesimpson.com
www.mesimpson.com

MCMAHON ASSOCIATES, INC.
PO Box 1025
Neenah, WI 54957-1025
920-751-4200 Fax: 920-751-4284
mcminfo@mcmgrp.com
www.mcmgrp.com

METROPOLITAN INDUSTRIES, INC.
37 Forestwood Drive
Romeoville, IL 60446
815-886-9200 Fax: 815-886-6932
sales@metropolitanind.com
www.metropolitanind.com

PITTSBURG TANK & TOWER MAINTENANCE CO.
PO Box 913
Henderson, KY 42419
270-826-9000
jpyles@pttg.com
www.pttg.com

RELINER/DURAN INC.
9 Matthews Drive, Unit A1/A2
East Haddam, CT 06423
800-508-6001 Fax: 877-434-3197
info@reliner.com
www.reliner.com

RICE LAKE CONSTRUCTION
22360 County Road 12, PO Box 517
Deerwood, MN 56444
218-546-5519
info@ricelake.org
www.ricelake.org

RUEKERT & MIELKE, INC.
W233 N2080 Ridgeview Parkway
Waukesha, WI 53188
262-542-5733
info@ruekert-mielke.com
www.ruekertmielke.com

Click HERE to return to Table of Contents

SEH
3535 Vadnais Center Drive
St. Paul, MN 55110
651-490-2000 Fax: 888-908-8166
mjensen@sehinc.com
www.sehinc.com

STARNET TECHNOLOGIES
8520 Hollander Drive
Franksville, WI 53126
262-886-0228
info@starnet-wi.net
www.starnettech.com

STRAND ASSOCIATES, INC.
910 West Wingra Drive
Madison, WI 53715
608-251-4843
marketing@strand.com
www.strand.com

TKDA
444 Cedar Street, Suite 1500
St. Paul, MN 55101
651-726-7977
daniel.nesler@tkda.com
www.tkda.com

TROTTER AND ASSOCIATES, INC.
40W201 Wasco Road, Suite D
St. Charles, IL 60175
630-587-0470
s.trotter@trotter-inc.com
www.trotter-inc.com

UNISON SOLUTIONS, INC.
5451 Chavenelle Road
Dubuque, IA 52002
563-585-0967 Fax: 563-585-0970
sales@unisonsolutions.com
www.unisonsolutions.com

VEOLIA WATER TECHNOLOGIES & SOLUTIONS
5951 Clearwater Drive
Minnetonka, MN 55343
ana.calderon@veolia.com
www.watertechnologies.com

WATERLY
4216 Belson Lane
Crystal Lake, IL 60014
815-529-5779
mandy@waterclick.tech
www.waterly.com

WATERSURPLUS
726 Beacon Street
Loves Park, IL 61111
800-919-0888 Fax: 815-636-8844
info@watersurplus.com
www.watersurplus.com

ZIEGLER CAT POWER SYSTEMS
8050 County Road 101
Shakopee, MN 55379
888-320-4292
www.zieglercat.com/solar

CALL FOR ABSTRACTS

97TH ANNUAL MEETING

Flowing into the Future

MAY 13-15, 2024

This is a request for abstracts of papers to be considered for presentation at the 97th Annual Meeting of the Central States Water Environment Association, Inc., which will be held May 13-15, 2024 at Renaissance Schaumburg Convention Center in Schaumburg, IL. To receive consideration, abstracts must be submitted online by **November 27, 2023.**

Submittals that will be given highest credit include:

- Submittals with a focus on day-to-day treatment, by people with hands-on experience at facilities.
- Topics in new emerging concerns, such as climate driven impacts on POTWs.
- Case studies presented from an operations perspective, young professionals, leadership skills, and middle management.
- Research topics and case studies related to new and innovative technologies.
- Submittals focusing on local projects or issues.

Two hours of ethics training are also on the program for engineers that require this to maintain their license.

Papers on other subjects which you feel may be of interest to members are always welcome. All written papers submitted are eligible for the Radebaugh Award. **Submittals may also include the following topics:**

IMPLEMENTATION to OPERATIONS and MAINTENANCE:

- Time management or new process startup
- Efficiency (pumps, motors, lights, UV disinfection, HVAC, etc.)
- Technology/SCADA/Web-based maintenance programs/GIS applications
- Troubleshooting – Traditional facilities (activated sludge, BNR), new processes (nutrient recovery) etc.
- Case studies of facilities
- Startup case studies
- Optimization

ADVANCEMENTS in LIQUIDS TREATMENT

- Enhanced primary treatment
- Secondary treatment advancements and intensification
- Nutrient removal
- Tertiary treatment
- Alternative disinfectants

WATERSHEDS and STORMWATER MANAGEMENT:

- Climate change-driven impacts on treatment plants
- Green infrastructure solutions and best management practices
- Implementing new MS4 permit requirements
- Anti-degradation and other regulatory issues
- Using grants and other funding sources to implement stormwater management as part of CIP projects
- Habitat or groundwater protection or restoration
- Non-point pollution source modeling
- Water quality trading and watershed management issues and initiatives, including adaptive management
- Green infrastructure solutions and best management practices
- Total maximum daily loads involving point and non-point sources
- Education and outreach

UTILITY MANAGEMENT:

- Communications
- Employee retention and development
- Succession planning
- Project funding
- Utility rate development and reviews
- The *Infrastructure Investment and Jobs Act*
- Significant industrial users and industrial pretreatment
- Emergency response/repairs

RESOURCE RECOVERY and ENERGY OPTIMIZATION

- Resource recovery – sourcing raw materials, nutrient recovery
- High strength waste and pretreatment programs
- Digester gas production and treatment technologies
- Lessons learnt from co-digestion
- Heat recovery case studies
- Alternative energy use
- Energy management and savings to utility management

COLLECTION SYSTEMS:

- Collection system rehabilitation technologies/methods
- Collection system rehabilitation case studies
- Educating the public on how to protect the system
- CMOM program development and implementation
- Collection system design and operation
- Green infrastructure case studies
- Infiltration/inflow management case studies
- Stormwater and combined sewer overflow management
- Stormwater conveyance

RESEARCH and DESIGN:

- New/innovative technology research and application
- Nutrient removal technologies
- Sustainability in design and construction
- Toxics/emerging pollutants monitoring and control

- Treatment design
- Wastewater reuse, applications, technology and regulatory issues
- Wastewater surveillance

RESIDUALS, SOLIDS and BIOSOLIDS:

- Pollutants of Emerging Concern – PFAS
- Standard or advanced treatment and stabilization
- Environmental management systems – National Biosolids Partnership
- Public education and awareness, case studies
- Fertilizer production – Class A case studies

GENERAL:

- Laboratory issues and bench-scale studies
- Pretreatment, industrial treatment, and pollution prevention
- Pollutants of emerging concern – PFAS, chlorides etc.
- Public education to address emerging concerns – chlorides, water softener use, leachate, flushable wipes, etc.
- Regulatory issues
- Security issues
- Engineering ethics training
- Collection system/treatment plant odor control

SOFT SKILLS/LEADERSHIP:

- Leadership skills
- Managing the ill or injured employee
- Generational integration
- Anti-harassment and discrimination training for managers
- Getting the most out of employee performance evaluations
- Union negotiations
- Handling the grievance and arbitration process
- Managing in a union environment
- Labor Law
- Management rights for Managers
- Social media and the workplace

To receive consideration, please submit your abstract via the online submittal process that can be accessed from the CSWEA website. To submit your abstract, please go to *www.cswea.org* and then to the 97th Annual Meeting Abstract Submittal area. Once you start the abstract submittal process using the online form, you cannot come back to it later. It is important to have all materials ready to submit before submitting. As a reminder, an abstract is meant to **summarize** the presentation. The summary should include objectives, scope, and general procedures, as the limited length of the abstract permits. An indication of results or conclusions is required. Submittal of presentations (slides) or a generic product brochure in place of an abstract, will not be considered. Thank you.

Christopher Buckley
Chair, Technical Program Committee
Engineering Enterprises, Inc.
cbuckley@eeiweb.com

INSTRUCTIONS FOR THE SUBMISSION OF ABSTRACTS AND CRITERIA FOR PAPER SELECTION

The Central States Water Environment Association (CSWEA) Technical Program Committee has the responsibility for technical sessions at the Annual Meeting. Participants in any sector of the water environment field are cordially invited to submit abstracts for evaluation. The basis for selection will be the excellence of the abstracts as judged by the committee.

The abstract should be submitted online at *www.cswea.org*. Through the online submittal process, you will enter the title and abstract, import your credentials, choose your topic area, and select your presentation format. Abstracts must contain a summary of no more than 500 words, with the full abstract (including all tables, figures, and references) not to exceed three (3) pages. Abstracts that are not in the required format will not be given equal credit.

The presenting author(s) of each abstract will be notified in January of the acceptance or rejection of the abstract.

The following should serve as a guide in the preparation of the abstract and will serve as a guide for the reviewers of the abstracts.

1. Originality and status of subject:

The paper should deal with new concepts or with new and novel applications of established concepts (operations and maintenance, collection systems, stormwater, utility management and leadership, research and development etc.). It also may describe substantial improvements of existing theories or present significant data in support or extension of those theories. Studies of incomplete or ill-defined problem situations should be avoided. Previously published data should be introduced only in summary form and for comparative or supportive purpose.

2. Content:

Abstracts can either be technical or non-technical in nature. In either case, it should be evident that the abstract clearly describes the entire content of the paper to be presented. The abstract content should be objective and non-biased toward specific products, approaches, or otherwise. Each abstract should contain clear purpose and impact for conference attendees.

Guidelines for technical abstracts: Where possible, abstracts should include data, figures, and methodology needed to draw proposed conclusions. The abstract should include whether the scale at which the project was completed (desktop, benchtop, pilot study, full-scale implementation, etc.) and at what stage of completion the project is in.

Guidelines for non-technical abstracts: Abstracts do not require data to justify proposed conclusions, but abstract content should present well-thought-out content, allowing for clear interpretation of the author's intent.

3. Water environment significance:

The paper should relate clearly and significantly to the water environment field. The author should make evident the relationships of the work to a practical problem area or situation in water quality and wastewater control.

4. Adequacy of abstract preparation:

The committee has noted that historically the adequacy of an abstract is often indicative of the quality of the final presentation. As a result, authors are urged to prepare their abstracts with care, following the instructions noted above. As a reminder, an abstract is meant to **summarize** the presentation. The summary should include objectives, scope, and general procedures, as the limited length of the abstract permits. An indication of results or conclusions is required. Submittal of presentations (slides) or a generic product brochure in place of an abstract will not be considered.

Abstracts are due by November 27, 2023
https://cswea.wufoo.com/forms/97th-annual-meeting-call-for-abstracts/

Click HERE to return to Table of Contents

CALL FOR AWARDS

97TH ANNUAL MEETING

Flowing into the Future

MAY 13-15, 2024

Our role in protecting the public and the environment are often undervalued and invisible to the very public that we protect. Whether in design, academia, equipment manufacture and supply, management, or operations, we all know individuals who have successfully addressed unique and challenging issues. Our awards program offers the opportunity to receive recognition for these deserving professionals.

Each year, one of CSWEA's top priorities is to recognize the efforts of our members and water and wastewater professionals at all levels. We also seek to provide top-quality nominees to the Water Environment Federation (WEF) each year for national level recognition. Don't miss this opportunity to provide recognition to deserving water quality professionals.

It's time to brag a little about the accomplishments of our members. To nominate someone is straightforward: fill out the nomination form at *https://bit.ly/39KRsaE* with as much information as possible and submit it to CSWEA.

In order for you or a deserving colleague to be recognized, please submit a nomination to the Central States Water Environment Association and/or WEF for one of the many awards available.

Below is a listing of the award opportunities. Please carefully review the various awards available and nominate one of our many deserving members. Please note that award submittals need to be made by December 1, 2023 for awards presented by CSWEA to allow distribution to the respective CSWEA or WEF Awards Committees for consideration. CSWEA will present the winners with their awards at the 97th Annual Meeting Awards Banquet.

2024 CSWEA & WEF Award nominations now being accepted

Nominations are now being accepted for the following CSWEA and WEF awards and should you be aware of a worthy nominee we ask that you please nominate them. Note that it is OK to self-nominate. Each award is briefly described below and complete information may be found on *www.cswea.org*.

WEF AWARDS presented at CSWEA Awards Banquet

Arthur Sidney Bedell Award:

The Bedell is a federation award that is given annually to one recipient in recognition of outstanding achievement in the sewerage and wastewater treatment works field, as related particularly to the problems and activities of the member association. The Bedell Award Subcommittee selects the nominations, and the award is presented at the CSWEA Annual Meeting.

William D. Hatfield Award:

The Hatfield Award is a federation award given annually to one recipient in recognition of outstanding operation of a wastewater treatment plant. Each State Section may nominate one person per year and submit it to the Hatfield subcommittee. This award is presented at the CSWEA Annual Meeting.

George W. Burke Safety Award:

The Burke Award is made annually by WEF to a municipal or industrial wastewater facility for promoting an active and effective safety program. Each State Section Committee can nominate a facility and the nominations are then sent to the general awards committee. The winner will be presented with the Burke Safety Award at the CSWEA Annual Meeting.

Lab Analyst Excellence Award:

This is a WEF award that is given annually to one recipient in recognition of outstanding achievement in the area of water quality analysis. Each State Section Laboratory Committee may nominate one person. This award is presented at the CSWEA Annual Meeting.

CSWEA AWARDS presented at CSWEA Awards Banquet

Radebaugh Award:

The Radebaugh Award is given to the author of a deserving paper presented at the previous year's annual meeting. The Radebaugh Award Subcommittee selects the winner and the award is presented at the CSWEA Annual Meeting.

Operations Award:

The Operations Award is a Central States award that is given annually to one recipient in each state. The purpose of this award is to recognize operators of wastewater treatment facilities who are performing their duties in an outstanding manner and are demonstrating distinguished professionalism. The States Sections'

Operations Committee makes the selection and each State Section winner will receive the award at the CSWEA Annual Meeting.

Industrial Water Quality Achievement Award:
The award is given at the CSWEA Annual Meeting to one industry per year in recognition of outstanding contributions in waste minimization, pollution prevention, environmental compliance, and environmental stewardship. Each State Section Industrial Committee may nominate one facility per year.

Bill Boyle Educator of the Year Award:
This award is given to one teacher per year in recognition of outstanding education assistance to students of any level in the study of the water environment. The award is presented at the CSWEA Annual Meeting.

Collection System Award:
This award is given annually to one member from each section in recognition of outstanding contributions in advancing collection system knowledge and direct or indirect improvement in water quality. Each State Section Collection System Committee can nominate one individual per year with the selected candidate receiving the award at the CSWEA Annual Meeting. The recipient of the Association Award shall be nominated annually for the WEF Collection System Award.

Ryan Giefer Outstanding Young Professional Award:
This award is given annually to one member from each state section in recognition of the contributions of young water environment professionals to CSWEA and to the wastewater collection and treatment industry. This award is presented at the CSWEA Annual Meeting.

Academic Excellence Award:
The Academic Excellence Award is given to one student per year from each eligible institution in the state section hosting the Annual Conference. (Illinois is hosting the next conference.) An eligible institution shall be a college or university having a recognized graduate or under- graduate program in engineering as accredited by the Accreditation Board for Engineering and Technology.
The candidate shall be selected by the department chair or other designated person at the eligible institution. Selected candidates are able to attend the CSWEA Annual Meeting with expenses paid, to receive their award and scholarship.

Central State Section Safety Award:
The CSWEA Facility Safety Award is made annually by CSWEA to a municipal or industrial wastewater facility within each State Section in recognition of active and effective safety programs from Burke Award submissions and the awards are presented at the CSWEA Annual Meeting.

Water Stewardship Award: This award recognizes and honors the contributions of an individual for outstanding humanitarian service to improving and sustaining our global water environment.

Sustainability & Green Infrastructure Award:
Established in 2017, this award recognizes and honors the contributions of an individual for projects at their organization that support sustainability in the water environment or make use of green infrastructure in the design of water reclamation facilities or in water treatment processes.

Water Technology Innovator Award:
Established in 2019, this award recognizes individuals or groups that look beyond the traditional water and wastewater operational models and incorporate or advance sustainable principles and cutting-edge practices, with a focus on resource recovery, efficiency, and sustainability.

WEF AWARDS presented at WEFTEC

Charles Alvin Emerson Medal:
This award is presented by WEF to an individual whose contributions to the wastewater collection and treatment industry most deserve recognition. Areas of involvement include membership growth, water resource protection, improved techniques of wastewater treatment and fundamental research.

Harry E. Schlenz Medal:
This award is presented by WEF and recognizes the achievements of an individual outside of the water environment profession, who takes up the banner of environmental public education. This person is typically in the journalism, film or video production field.

Richard S. Englebrecht International Activities Service Award:
This award is presented by WEF and recognizes sustained and significant contributions to the furtherance and improvement of the activities of the Water Environment Federation in the international field. CS

Submit your nomination at *https://bit.ly/39KRsaE*

OCTOBER 1

2023 CSWEA/IWEA WEFTEC WELCOME RECEPTION
Lacuna Lofts | Chicago, IL

OCTOBER 7

DOWNER'S GROVE SD OPEN HOUSE
Wastewater Treatment Center | Downer's Grove, IL

OCTOBER 31

CSWEA OPERATOR TRAINING WEBINAR
Virtual Event

For up-to-date CSWEA events, visit our website ***www.cswea.org***.

NOVEMBER 9

2023 CONFERENCE ON THE ENVIRONMENT
Minneapolis Convention Center | Minneapolis, MN

NOVEMBER 15

2023 ILLINOIS BIOSOLIDS, ENERGY EFFICIENCY, AND RECOVERY SEMINAR
Fox River Wrd | South Elgin, IL

NOVEMBER 29

CSWEA OPERATOR TRAINING WEBINAR – PURPOSE AND FUNDAMENTALS OF SOLIDS HANDLING
Virtual Event

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ACEC Wisconsin 2023 Engineering Excellence Best of State Award

Congratulations, City of Stevens Point!

Liquid to Dried Biosolids Conversion

The City of Stevens Point and Donohue worked together to sustainably address solids handling challenges at the wastewater treatment plant. Biosolids are converted to a dried Class A product for use as a nutrient-rich fertilizer. Biogas produced during the anaerobic digestion process powers the drying system, reducing natural gas needs by 90%. A liquid storage tank was converted to an anaerobic digester, allowing the City to take in more waste from regional food processors and generate more biogas for energy reuse.

The existing storage building was updated to house the new drying facilities and a new interdepartmental office and garage facility was created in its place. Clean wastewater effluent powered by rooftop solar panels is used for geothermal heating and cooling of the truck bay and workspaces.

DONOHUE

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