



CONTINUING EDUCATION

2020 *Virtual* Onsite Wastewater Mega-Conference
November 16-18, 2020, with courses available to registrants until
December 31, 2020.

Note: The 2020 Onsite Wastewater Mega-Conference was originally scheduled for October 25-28, 2020 at the Hampton Roads Convention Center in Hampton, VA. That event was cancelled due to COVID-19.

The National Onsite Wastewater Recycling Association (NOWRA) is the largest organization within the U.S. dedicated to educating and representing members within the onsite and decentralized industry. Our members include educators, regulators, engineers, contractors, manufacturers, suppliers, service providers, and others in the protection of North America's water resources and environment.

www.nowra.org





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To: Continuing Education/Licensing Professionals
From: Eric Casey, Executive Director, NOWRA
Re.: Request for Approval of Continuing Education Units
Date: September 17, 2020

The National Onsite Wastewater Recycling Association (NOWRA) will host a fully virtual 2020 Onsite Wastewater Mega-Conference November 16-18, 2020. The traditional in-person Mega-Conference had to be cancelled due to COVID-19 concerns.

The *Virtual* Mega-Conference will feature 46 separate classes on various aspects of onsite wastewater design, installation, maintenance management and policy. **I ask you to review and approve the enclosed 2020 Virtual Mega-Conference Curriculum Summary for onsite wastewater professionals in your state who require continuing education units to earn or maintain their professional license/certification.**

This communication includes our **2020 Virtual Mega-Conference Curriculum Summary** for review and **approval**. An outline of the conference agenda, descriptions of each general session, a schedule of concurrent education sessions, and speaker biographies are included. The schedule of concurrent education sessions outlines information such as the time, session title, name of speaker, and session abstract.

Although the format is different, the quality of the educational content will be consistent with prior years. All conference concurrent education session presentations are peer-reviewed prior to acceptance. While our General Session presentations are not peer-reviewed, all of the speakers are recognized as thought leaders and experts on the topics they are addressing.

As we developed the format for this conference, two concerns were paramount. First, we felt that it was important that there be opportunities for participants to interact. Second, we wanted to make sure we were able to provide evidence of participation.

To address the first concern, it helps to understand conference structure and how education is being delivered. Each day of the conference there are morning and afternoon blocks of education. Most blocks are two hours long; two are three hours. Within each time block, a live question and answer Zoom session will take place, featuring all of the speakers from that education block appearing together. Almost all of the concurrent education sessions will be recorded in advance. This helps to ensure that speakers don't encounter content delivery glitches due to internet connectivity problems. The live Zoom session helps to ensure that session participants have an opportunity to interact with the speaker.

To address the second concern, each class in the curriculum will have a quiz the participants will need to pass before they receive a certificate of attendance. The certificate can be printed by the participant and presented to the appropriate approval office. For those states which require the conference host to provide documentation, our online education platform can export whatever information is needed to document attendance. The certificate for this conference has not yet been designed, but will be similar to the example on the following page.

NOWRA has been successfully delivering online education for industry contractors since 2017. We currently offer more than 20 hours of online continuing education (along with an additional 30+ courses offered by several

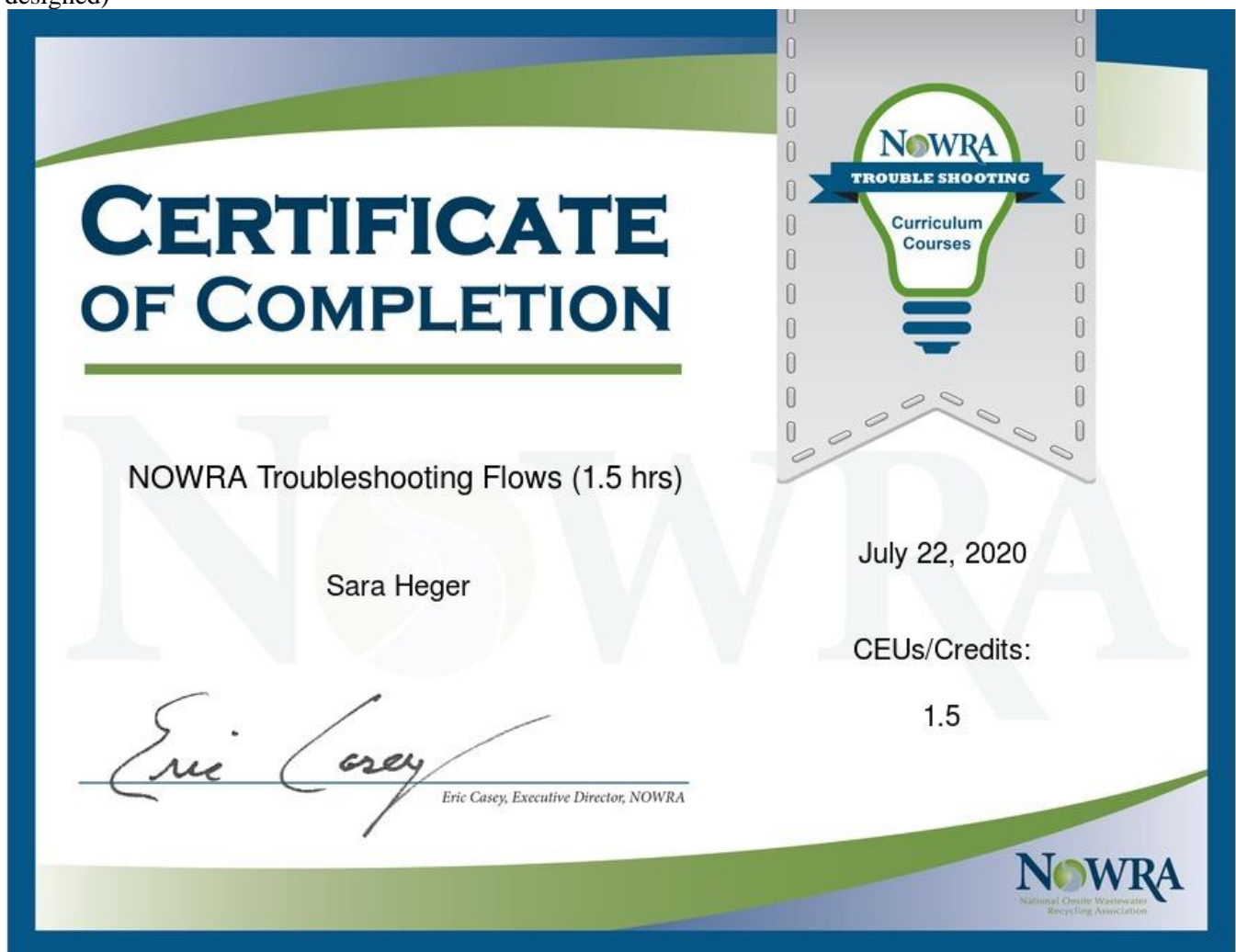
of our affiliated state onsite associations). All state courses are approved by the respective state's regulator, and more than a dozen states approve some or all of NOWRA's educational programs for continuing education credit.

While NOWRA is the lead organization for the 2020 Onsite Wastewater Mega-Conference, the conference is a partnership between NOWRA and the following organizations: the National Association of Wastewater Technicians (NAWT), the State Onsite Regulators Association (SORA), and the Virginia Onsite Wastewater Recycling Association (VOWRA). The annual Mega-Conference is the largest event of its kind and offers decentralized professionals the highest quality education and training available.

Questions?

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Example of the kind of certificate attendees will receive (2020 Mega-Conference certificate is currently being designed)



2020 VIRTUAL ONSITE WASTEWATER MEGA-CONFERENCE

November 16-18, 2020

www.NOWRA.org/2020mega

LEARNING OBJECTIVES

Learning objectives for professionals attending the Onsite Wastewater Mega-Conference are:

- Provide them an opportunity to increase their knowledge and proficiency in their current position
- Help them understand some of the macro issues which have an impact on their day-to-day activities
- Offer information which will help them advance their careers or expand their business opportunities
- Provide a forum for informal exchanges of knowledge with fellow professionals from around the country

Educational outcomes for the Onsite Wastewater Mega-Conference flow directly from the learning objectives. Professionals attending this conference should, at a minimum, obtain the following educational outcomes:

- Obtain relevant, current and reliable information which builds upon and expands their knowledge of their profession
- Gain ideas or tools which enable them to manage new responsibilities or take on new challenges
- Expand their network of professional connections within and outside of their specific professional specialty



CONTINUING EDUCATION

2020 *Virtual* Onsite Wastewater Mega-Conference
November 16-18, 2020
Reaching New Heights

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General Session

Monday, November 16, 2020

9:00 am – 11:00 am



EPA Update

Dr. Andrew Sawyers

Director, Office of Wastewater, USEPA

Dr. Sawyers will discuss EPA's activities in support of onsite and decentralized wastewater systems. He will place particular emphasis on their implementation of federal legislation related to decentralized wastewater, and other EPA programs.

Biography: In his capacity as the Director of the EPA Office of Wastewater Management Dr. Sawyers oversees the National Pollutant Discharge Elimination System (NPDES) program, the Clean Water Act's mechanism for the permitting of municipal and industrial discharge into surface waters of the U.S. As the Director of OWM, Dr. Sawyers is also responsible for multiple technical and financial assistance tools for the development and maintenance of the country's wastewater infrastructure, including WIFIA, the Clean Water State Revolving Fund (SRF) and EPA's Water Finance Center. He previously worked for the Maryland Water Quality Financing Administration where he managed the state's Clean Water and Drinking Water SRFs and Maryland's Chesapeake Bay Restoration Fund. He has a Ph.D. from Johns Hopkins University in Geography and Environmental Engineering.



USDA Update

Edna Primrose

Assistant Administrator, USDA Rural Development Water and Environmental Programs

Ms. Primrose will provide an overview of the various financial programs USDA provides to support rural water infrastructure. She will also provide details about USDA's new Rural Decentralized Water Systems Grant program. This is a new program which will provide low-interest loans to financially disadvantaged rural homeowners to repair/replace malfunctioning onsite systems.

Biography: Edna Primrose was named Rural Development's Assistant Administrator for Water and Environmental Programs in April 2018. In this role, Ms. Primrose leads multi-billion dollar direct and guaranteed loan, grant, and loan guarantee programs to benefit water and waste disposal systems in rural communities. Prior to assuming her new position, Ms. Primrose served as Rural Development's Chief Operating Officer since 2012. She was responsible for providing executive leadership in administering all administrative management program policies and operational support for the entire Rural Development Mission Area.

Ms. Primrose served as the National Director for the Office of Job Corps, managing large-scale programs at the U.S. Department of Labor. She has served in executive leadership roles in both the public and private sectors for over 20 years. Ms. Primrose earned a Bachelor's degree from Towson University, Towson, MD.



Status of Advocacy/Lobbying Efforts on Behalf of Onsite and Decentralized Wastewater

Hon. Alan Wheat

Partner, Polsinelli, LLC

Mr. Wheat is a former Member of Congress who leads Polsinelli's Washington Government Relations team, which represents NOWRA on Capitol Hill. He will provide an analysis of the legislative and regulatory landscape, initiatives underway which may have an impact on the onsite/decentralized industry, and steps the industry can take to increase its influence in Washington on those initiatives, particularly in light of the 2020 election.

Biography: With 18 years of experience as an elected official, and chair of Polsinelli's Public Policy practice, Congressman Wheat counts many of Washington's most influential voices among his relationships. Those relationships are at the highest levels of Executive Agencies, the White House, House and Senate leadership, the key committees in both the House and Senate and numerous advocacy organizations. In 1982 he was elected to the United States House of Representatives, where he became part of the House leadership as the youngest member in Congressional history to be appointed to the powerful Rules Committee. While in Congress, he was one of the nation's first African-Americans to represent a district with a white majority. Following his Senate race, Congressman Wheat became Vice President of Public Policy and Government Relations with one of the largest and most vital global relief and development organizations, CARE.



Restoring the Chesapeake Bay and the Role for Wastewater Treatment

Ann Jennings

Deputy Secretary of Natural Resources for the Chesapeake Bay, Commonwealth of Virginia

A decades-long regional effort to reduce nutrient pollution to restore the water quality of the Chesapeake Bay and its tributaries is showing results but additional challenges remain. Clean water practices are being employed on farmland, urban centers and wastewater treatment systems. Providing and maintaining adequate wastewater treatment are critical to Chesapeake Bay restoration as well as for public health and local economies.

Biography: Ann Jennings is the Deputy Secretary of Natural Resources for the Chesapeake Bay under Secretary of Natural Resources Matt Strickler in the office of Governor Ralph Northam. Prior to her current position, she was the Virginia Director of the Chesapeake Bay Commission, a tri-state legislative commission created to advise the General Assemblies of Maryland, Pennsylvania, and Virginia on matters of Bay-wide concern. Prior to the Commission, Ann served as the Virginia Executive Director of the Chesapeake Bay Foundation. Ann's career also includes work as a biologist with the U.S. Fish and Wildlife Service. Originally from Virginia Beach, Ann received a bachelor's degree in biology from Virginia Tech and a master's degree in wildlife and fisheries sciences from Texas A&M University. Ann is a graduate of the Virginia Natural Resources Leadership Institute and the Sorensen Institute's Political Leaders Program.

Concurrent Sessions by Date/Time

Monday, November 16, 2020, 2:00 pm – 4:00 pm

Mini Track: Planning

Session title: Planning for Sustainability: Case Studies for Improved Wastewater Decision-Making (1 hour)

Presenter: Victor D'Amato

As communities shift their water quality protection efforts to focus on non-point sources of pollutants, sewerage of properties on septic systems 'septic-to-sewer programs' are increasing in frequency and magnitude. At the same time, decentralized water practitioners continue to develop approaches and technologies that address real and perceived shortcomings of septic systems, and mainstream water professionals espouse decentralized 'One Water' approaches, including building-scale water reuse systems in urban areas. Clearly, onsite wastewater management can be reliable, sustainable and cost-effective in a variety of geographies and contexts. This paper will demonstrate robust processes for wastewater management decision-making using case studies. The Delaware Department of Natural Resources and Environmental Conservation sponsored an analysis that compared costs of centralized and decentralized alternatives for water and sewer in select underserved areas. Maryland Department of Environment completed a data mining, management and analysis effort that rated potential upgrades to campground and mobile home park wastewater systems to help comply with Chesapeake Bay Watershed Plan Implementation. In Puerto Rico, a coalition of entities is inventorying existing wastewater infrastructure with an eye toward improved management. In North Carolina, small area plans have been developed for improving wastewater service and protecting water quality in both rural and developed areas.

Session title: National Assessment of Onsite Wastewater Treatment Systems (2015-2018) (30 min.)

Presenter: Cory Yarrington

Onsite wastewater treatment systems (OWTS) have been and will continue to be a viable option for the treatment of wastewater in areas not served by centralized wastewater treatment systems. Every state in the nation has a population served by decentralized wastewater systems. However, wastewater treatment funding opportunities are frequently passed up due to the inability to provide data to establish a need. To address this lack of data, the National Environmental Science Center (NESC) conducted a national assessment

of OWTS and new housing permits at the state and county level over the period of four years (2015-2018). The data compiled allows permit data to be analyzed by a) size: residential and commercial; and b) type: new and repair/replace. This study led to the concept development of Onsite System Utilization Rate (OSUR), a measure to calculate the percentage of new residential housing built with OWTS permits. With the data collected, the report shows national OSURs were estimated to be 31%, 34%, 38%, and 32% for 2015, 2016, 2017, and 2018; respectively. Knowledge of trends with existing OWTSs provides agencies with necessary information to appropriately allocate resources to ensure OWTSs are providing necessary environmental and human health protections. This study exemplifies widespread reliance upon decentralized wastewater treatment across the United States, and the need to leverage appropriate resources to ensure continued environmental and public health.

Session title: Straight Pipes in the United States: Scope, Impacts and Solutions (30 min.)

Presenter: Mark Elliott and Jillian Maxcy Brown

The use of straight pipes, surface discharge of raw wastewater from homes, was made illegal throughout the United States through the Clean Water Act in 1972. In most jurisdictions, the prohibition on straight pipes is enforced by preventing the exchange property or connection to the power grid for homes without a sewer connection or permitted onsite wastewater treatment system. Despite these prohibitions, it is widely known that straight pipes have not been completely eradicated. However, the number, location, scope and impacts of straight pipes is unknown. Reports of straight pipe use and even county-level estimates of their prevalence at a point in time have been disseminated through a diverse range of trade publications, agency reports, academic articles and popular media. In some rural Alabama and West Virginia counties with widespread poverty and particularly challenging soil, geological and topographic conditions, it has been reported that more than 50% of unsewered households use straight pipes. Although straight pipes appear to be more common in the rural South and in Appalachian mountain communities, we found documented evidence of straight pipes in over a dozen states throughout the US. For example, the Minnesota Pollution Control Agency published a 2001

estimate that there are over 60,000 straight pipes in the state, broken down for each county. This presentation will summarize the current evidence for the scope, nature and impacts of the straight pipes in the US.

Mini Track: Regulatory Issues

Session title: Property Transfer Evaluations in New Mexico since 2005, Managing the Process and Changes; (The Good, the Bad and the Ugly) (1 hour)

Presenter: Michael Broussard

Property transfer evaluations were enacted September 2005 in New Mexico with realtors and installers support. Evaluations have proven to be the most significant measure to improve onsite wastewater compliance since regulatory inception. The process evolved over the years defining regulatory authority involvement. Evaluations drive most permitted modifications and leads to the discovery of more unpermitted systems than the department could have identified otherwise. Transfer evaluations identify more illegal systems including cesspools in the most unlikely places as well as serious threats to the environment. Installers have praised it, some realtors have questioned it but, most have learned to embrace it. Education and training have proven to be tremendously helpful in alleviating disputes. As training professionals begin to train real estate professionals the report's value has significantly improved, and the contentious nature of the contents have decreased. Training department staff and evaluators has also proven to be very beneficial in reducing disputes. Despite all the efforts in refining the process and training we still see challenges. The keys to controlling or managing the process are the evaluation form, the professional and staff training, and developing FAQs to address challenges. The department looks forward to working with key stakeholders, such as realtors and installers to achieve even greater property transfer evaluation enhancements.

Session title: Wastewater Islands and Onsite O&M (1 hour)

Presenter: Danna Revis

The phrase "wastewater island" refers to an area where sewer is not available and there are additional challenges for homeowners who need options for

sewage disposal. In addition to finding funding for new systems, many systems installed in these areas require advanced operation and maintenance to function reliably. How can we bridge the gap among low-income homeowners, private maintenance providers and regulatory requirements for maintenance? The answer is funding, but how can we provide the funding and assure it goes to the proper purpose?

Mini Track: Regulation in Virginia

Identifying Wastewater Infrastructure Needs for the Commonwealth (30 min.)

Presenter: Lance Gregory

The purpose of this presentation is to share information on the Virginia Department of Health's work with Wastewater Infrastructure Workgroup to identify community and individual wastewater needs throughout the Commonwealth. This includes work with the Virginia Institute of Marine Science to develop unique tools to model the location of suspected areas with wastewater infrastructure needs.

Session title: Virginia Onsite Sewage System Professionals Licensing Updates (30 min.)

Presenter: Trisha Henshaw

The Virginia Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals licenses onsite soil evaluators, onsite septic system inspectors, and onsite septic system operators. The proposed presentation would provide important licensing and examination updates, information regarding recent Board and agency guidance affecting licensees, as well as an overview on expected future actions impacting licensees.

Session title: Department of Health - State Program Update (1 hour)

Presenter: Lance Gregory

The purpose of this presentation is to provide participants with a statewide programmatic update, to include updates on legislative actions from the 2020 General Assembly session (House Bill 1266), progress on revisions to the Sewage Handling and Disposal Regulations, and progress on the revision to the Private Well Regulations. [This presentation was requested by VOWRA.]

Tuesday, November 17, 2020, 9:00 am – 12:00 pm

Mini Track: COVID-19 and Wastewater

Session title: Impacts of COVID-19 on the Decentralized Industry (1 hour)

Presenter: Sara Heger

The current global coronavirus crisis caused by SARS-CoV2, or COVID-19 has highlighted the interconnectedness of our planet in ways that were underappreciated by the average American until recently. There are numerous issues that have arisen related to septic systems in relation to COVID-19. The first relates to worker safety. As the epidemic began there was concern for those working around wastewater and access to appropriate personal protective equipment. Question arose to the treatment of COVID-19 through large to small wastewater treatment systems. Another large issue that arose related to the financial impact to small business across our industry. Then there was the shifting of wastewater production as sheltering in place spread across the United States many people shifted towards using home offices, home schooling and generally spent much more time at home and increased their load to their system. At the same time the use of sanitary wipes and other sanitizing products increased due to heightened safety concerns. This presentation will discuss the short- and long-term potential impacts of these issues.

Session title: Panel Discussion: Just One More Worry – Perspectives on Dealing with COVID on the Job (2 hours)

Presenter: Cindy Tiemann, Panel chair

The wastewater industry is no stranger to dealing with issues that affect how their businesses operate. Some of these issues can be related to weather, seasons/climate, the economy, the labor market, local rules and regulations, state and federal mandates to name just a few. This year the continent is not only being hit with horrible storms and fires but the world has also been hit with a Pandemic that is turning 2020 into the year that many businesses may end up calling their last year in business. It's yet one more worry... For this session today, we have gathered a group of 11 Wastewater owner/operators from across the US and Canada to discuss all of the issues they dealt with and continue to encounter during this Pandemic. We will discuss their thoughts on being termed "Essential Workers" for the first time ever. What were their initial and ongoing thoughts and fears as they made decisions for their companies, knowing every decision they made

could very well affect, not only themselves but their entire Business, Person in their Family and every employee as they steered them all into the eye of this Pandemic Storm, while not knowing or being able to visualize the final destination. Did they change course based on any association recommendations or was it simply business as usual? Were there course changes due to State or requirements or were they proactive on creating their own precautions for their business? Were there any personal issues that came up along the way that made them change their course? Zoom with us as we listen to these wastewater operators from all over this vast continent talk to each other about their thoughts, hopes and decision making processes as they relate to their concerns about this pandemic and the wastewater industry and profession as a whole. Are they worried about the future? What are their plans? What if any are their projections for their businesses and this profession moving forward? From this conversation you will be able to see just how different each part of this continent is from their perspective and how people really do think and act differently in each part of it.....OR do they?

Panelists:

- Cindy Tiemann – Fiedler Your Pumping Specialists, Inc- Royalton, Minnesota
- Morgan McAtee – McAtee Company, Inc – New Gloucester, Maine
- Thomas Van Wart – A-1 Porta Pots and Septic Service – St. David, Arizona
- Chris Aitkin - Rankins Septic Tank Pumping & Environmental Services, Waterdown, Ontario Canada
- Ronnie Tamez First Call Septic, Battleground, Washington
- Jesus Juice Rosales, Juices Septic & Grease Pumping, San Saba, Texas
- Doug McAtee McAtee Company, Inc-New Gloucester, Maine
- Doug McAtee McAtee Company, Inc-New Gloucester, Maine
- Charlie Pelsoni - Pelsoni Pumping and Portable Toilets, Lake City Florida
- Stacy Creech – Creech's Plumbing - Wilson, North Carolina
- Chris Scott -Scotts Septic Tank Service, LLC - Christiana, Tennessee

Mini Track: Funding & Program Assessment

Session title: Online classes: 4th Bridesmaid or Golden Ticket (30 min.)

Presenter: Kevin Sherman

As someone who has loved teaching in-person training and a self-confessed skeptic of the value of online learning, it has been eye opening to prepare an online class for NOWRA in the spring of 2020. In this talk, the speaker will describe his journey and lessons learned developing an online course. The lack of direct real-time connection between the speaker and the audience in online learning is concerning. I discovered my online class prepared on a favorite topic had to be completely rewritten to be clearer than it had ever been in-person. In online courses, all you can provide the audience is your voice and visual aids. You must maximize both to produce a quality on-line class. I missed noticing confused looks in the audience and clarifying what I meant real-time while lecturing in-person. This deficiency makes preparing crystal clear and easy to read slides essential. I decided to prepare a script for each slide. This process ensured all the information was conveyed at some time during the class. I tried to remove colloquial terms so people from across a broad spectrum understood me. I found I had to animate some slides so students would realize where I would have pointed to on a slide had I been there. I suggest that a number of anonymous reviewers with different backgrounds beta-test each online class for clarity of instruction and visuals. The online platform advantage is the ability to reach future students who will value the information presented.

Session title: Onsite Wastewater Research Funding - Texas Model (30 min.)

Presenter: Anish Jantrania

Research is necessary for advancement and progression of any industry, including the onsite wastewater industry. However, funding a strong, sustained, research program at a state level is quite challenging. In the late 80s, Texas State legislators debated and passed a law requiring the state's environmental regulatory agency to award competitive grants supporting applied research and demonstration projects regarding on-site wastewater treatment technologies. It was famously called the "\$10 research fee law" and supported research efforts from 1992 to 2012. The Onsite Wastewater Center at Texas A&M University is one of the programs started with the support from this funding. Texas is unique from most other states in that it has a "sunset policy" requiring certain laws to be

renewed after 20 years or get abolished. The \$10 research fee law was not renewed in 2013 and state funding for onsite wastewater research stopped. But the state continued to collect the \$10 fee from the local permitting authorities and the funds were used to support activities unrelated to the onsite wastewater industry. In 2105, the Texas Onsite Wastewater Association got involved to reinstate the research funding through political lobbying efforts, and got it done in 2017. This paper discusses the details of the onsite permitting program in Texas and how the \$10 per permit fee is supporting the research now. Audience discussion related to programs in their states will be part of the presentation.

Session title: On Site Wastewater Research at Texas A&M University (30 min.)

Presenter: June Wolfe

Authors: June Wolfe III, Anish Jantrania, Gabriele Bonaiti, and Ryan Gerlich.

Texas A&M AgriLife Research and Extension's (AgriLife) On Site Sewage Facility (OSSF) Research Team was awarded 3 contracts to address topics requested by the Texas Commission on Environmental Quality. Proposals addressing black water non-potable reuse (BWR), low-pressure dosing systems (LPD), and aerobic treatment unit adequacy with higher strength wastewater and alternative dosing schemes (ATU) were funded. This presentation describes the experimental design, field installation, and preliminary results of each research topic. AgriLife is using BioBarrier MBR 0.5 (NSF Standard 350) and Clearstream NC3 (NSF Standard 40) products to investigate BWR for non-potable reuse, mainly for toilet flushing. AgriLife is evaluating field scale performance of LPD trenches applying standard septic tank effluent. Conventional LPD has emitters facing down while experimental LPD emitters face up and are protected with either 1) orifice shields or 2) leaching chambers. AgriLife is evaluating current ATU design adequacy as organic concentrations and hydraulic flows present in residential ATU's have changed due to water conservation devices and graywater reuse. A range of high organic strength influents and different dosing schedules are being applied to Two Clearstream N500 ATU's operated in parallel.

Session title: Macroinvertebrates as Indicators of Septic System Density (30 min.)

Presenter: Gary Hawkins

The Mulberry River watershed is a large network of streams that spans across Jackson and Barrow counties in Northeast Georgia. The area that the watershed is located has very diverse land usage and features many areas where on-site sewage management systems are found in great density. This watershed appeared to be ideal for a study in which macroinvertebrate communities and water quality could be monitored in relation to areas of high, medium, low, and no septic system density. Eight first order streams, ranging from 1,500 to 5,000 acres and located in different areas of septic tank density were selected for monitoring. Grab samples of water are taken and analyzed for nitrates, conductivity, and a variety of other parameters. Macroinvertebrates are monitored using an adapted sub-sampling procedure. These samples were then quantified using three different biological indexes (Hilsenhoff, EPT, and Margalef's richness). In addition, a dosage trial was run to test the effects of nitrates on mayflies (*Maccaffertium*). The dosage trial data indicates that nitrates can possibly affect mayfly populations if found in high concentrations. This study is scheduled to collect water samples twice monthly and sample macroinvertebrates quarterly to evaluate both water quality changes and seasonal macroinvertebrate diversity. The results of this experiment are showing slight trends in the relationship between water quality, the density of septic systems, and macroinvertebrate indices.

Session title: Transitioning of Design Services - Virginia's Experience (30 min.)

Presenter: Lance Gregory

The purpose of this presentation is to share Virginia's experience in transitioning onsite sewage system evaluation and design services from local health department to the private sector. The presentation will cover Virginia's 20+ year history on the topic, how it started, Virginia Strategic Vision, and where we go from here.

Mini Track: CDL & Vac Truck Training

Session title: Vacuum Truck Technician Training (2 hours)

Presenter: Bruce Fox

The Vacuum Truck Technician training course is targeted to those that own or operate a vacuum truck which is used to clean septic tanks, aerobic treatment units, holding tanks or grease traps. It is directed specifically at owners and employees who may just be starting in business and need a good solid base of information to work with to perform their daily tasks. At the same time this training provides a good refresher and overview for even experienced operators.

Topics of instruction include:

- Materials to pump and avoid
- Government regulations
- Truck equipment and components
- Drive and control mechanisms
- Basic and advanced pump out skills and procedures
- Loading and unloading
- Safety and emergency response plans
- Customer interaction and education
- Reasons to manage these materials
- Basic science of vacuum and pressurization
- Pumps
- Basic Pump Truck Operation
- Manifests and reports

Session title: CDL and DOT requirements for pre-/post-trip inspection (1 hour)

Presenter: Fred Yuhasz

This session will discuss the changes in CDL regulations with regard to completing pre-/post-trip inspections. What the business owner needs to know about the process and any liability issues with these inspections. It will also discuss what a new or applicant CDL individual will need to know to be able to pass the CDL exam. In addition the topic of how to deal with road-side inspections will be discussed.

Tuesday November 17, 2020, 2:00 pm – 4:00 pm

Mini Track: Reuse Technology

Session title: Fenner Nature Center Wastewater Treatment and Re-Use Project (1 hour)

Presenter: Larry Stephens

The average person in the U.S. spends much of their lifetime away from home using public restrooms. We know from experience that about 80% of the water used in public restrooms is used to flush wastes. We typically treat all of our water to potable water

standards to be used for all purposes. If wastewater is captured and treated at or near the point of use, that water can be re-used for flushing toilets and urinals saving significant infrastructure and energy costs. Manufacturers of onsite wastewater treatment products today have developed almost an endless list of treatment technologies that can be used to highly treat wastewater to be clear and odorless resembling potable water. Fenner Nature Center in Lansing, MI was building a new environmental education building and needed an onsite wastewater system. The nature center has thousands of visitors every year, including 12,000+ school-age children. The construction of the new building gave our onsite industry a chance to create a wastewater treatment and reuse system that could be incorporated into the environmental education goals of the Nature Center. Onsite system manufacturers, local contractors and MOWRA members donated most of the materials and labor to construct the system. The system came on line in Dec. 2019.

Session title: Reuse Comes to On-Site Systems (1 hour)

Presenter: Gary MacConnell

Reuse wastewater systems have been common for municipal and larger community systems. However, reuse systems for small systems including single family homes have been less common. With advancement in technologies, it is now possible for small systems to be permitted, installed, and operated successfully. One single family on-site system in North Carolina was modified using a recirculating media filter to meet State regulatory requirements for re-use. The challenges, design modifications, operation and success of the system are presented in detail as a case study.

Mini Track: EPA Updates

Session title: EPA's Decentralized Wastewater Program Update (30 min.)

Presenter: Heidi Faller

The U.S. Environmental Protection Agency (EPA)'s, Office of Wastewater Management (OWM), Decentralized Wastewater Program provides resources, education, and outreach at a national level for managing and maintaining decentralized wastewater systems. This presentation will highlight the major accomplishments and updates of the Decentralized Program in 2019-2020, including SepticSmart Week, and the Decentralized MOU Partnership. The Decentralized Program's annual outreach campaign, SepticSmart Week, promotes proper care and maintenance of septic

systems primarily for homeowners. EPA's Decentralized Wastewater MOU Partnership, which consists of associations and experts in the decentralized field, helps to promote the messages of SepticSmart Week to their members, develop SepticSmart materials and foster outreach and education on decentralized wastewater systems. Achievements of the MOU Partnership will be presented, including highlights from the 2020 MOU Partnership renewal.

Session title: Pathways to Success for Funding Decentralized Systems with the Clean Water State Revolving Fund (30 min.)

Presenter: Naomi Huff

Approximately one in five American households rely on some type of decentralized wastewater treatment system for treatment of their home's sewage. However, the impacts of failing or inadequate systems can have negative effects on human and environmental health as well as accrue detrimental economic loss. As a means to assist individuals or communities with decentralized systems, the Environmental Protection Agency (EPA) has created a guide that will aid people in how to access economic resources and navigate the Clean Water State Revolving Fund (CWSRF). Under the CWSRF, the funding of decentralized wastewater system repair, replacement, and/or new construction are eligible projects. However, historically, many states have not utilized this source of funding for decentralized projects in their own state. This presentation will outline a step-by-step pathway to success for the decentralized community to help communicate the need to better access this source of funding at the state level, as well as include examples of state programs that have successful mechanisms in place to fund decentralized wastewater systems in their state.

Session title: EPA's Decentralized Wastewater Workforce Update (1 hour)

Presenter: Zach Lowenstein

EPA's Decentralized Wastewater Program has been addressing the challenges surrounding the decentralized wastewater workforce, such as recruitment, retention, availability of training, etc., over the past few years. Building off of the listening sessions at the 2018 Onsite Wastewater Mega-Conference, and the national meeting at the National Environmental Health Association's 2019 Annual Education Conference, EPA and the Decentralized Wastewater Workforce Steering Group have been working on materials to help address the workforce needs of the

industry, primarily, through two key deliverables: 1) the mapping of career pathways by industry subset (e.g., private sector, regulatory, independent contractors, academia) that encompass the variety of occupations within that subset, including the growth projections and competencies required for each of those careers, and 2) a national scan of education and training programs, as well as identification of gaps in education and training programming to promote partnerships with education institutions that lead to sustainable programs leading to employment in the decentralized wastewater industry. This presentation will provide an overview of the key findings of the research mentioned above, as well as a discussion on next steps for workforce development for the decentralized wastewater industry.

Mini Track: Alcohol & Wastewater

Session title: Wastewater in Brewing (1 hour)

Presenter: Jim King

This presentation focuses on the methods used to design a septic system for the varying waste strength from different brewing operations. The presenter will examine the concerns attached with specific results (BOD, TSS, Nitrogen, pH, etc.) from testing and where these concerns arise in the brewing process. The environmental impact of each identified result will be examined, specifically focusing on disposal concerns. The presentation will end with a discussion on methods used to manage the wastewater and will include an examination of treatment options, standards that exist to address the concerns of the industry and considerations on pump and haul.

Session title: Identifying Challenges of Alcohol Processing Wastewater (1 hour)

Presenter: Lorna Withrow & Sushama Pradhan

When discharging wastewater effluent to a subsurface dispersal wastewater system, the last thing one wants to do is to compromise the system or contaminate soil, groundwater or surface water. It would be so much easier if all wastewater was created equal. However, that is not the case. There are industries that produce wastewater containing constituents or having constituent concentrations at levels that discharges of untreated or undertreated wastewater may pose potential threats to the environment and public health. Characteristics of the wastewater produced are the result of the raw products and processes utilized in production. Differences in raw products or processes can result in distinct and dramatic differences in wastewater generated by facilities producing equivalent end products. The alcohol production for human consumption (e.g., beer, liquor, wine) industry is an example of such wastewater generation. The wide range of parameter levels and constituent concentrations in alcohol production generated wastewaters present challenges when it comes to treatment, especially when utilizing soil as the last phase of the treatment process. Failure to reduce constituent concentrations can create multiple issues. For instance, while mass loading of BOD positively correlated with development of a clogging layer in dispersal areas, high sodium concentrations can cause dispersion of clay particles in the soil reducing the permeability.

Wednesday, November 18, 2020, 9:00 am – 12:00 pm

Mini Track: Innovative Thinking

Session title: Use of permeable reactive barriers for passive nitrate removal from onsite wastewater effluent (30 min.)

Presenter: Bryer Manwell

Operation of onsite wastewater systems has the potential to create deleterious effects on human health and the environment. Nutrient and pathogen loading from onsite wastewater systems to surface water bodies is of particular concern in areas of high population density and high groundwater. Nutrient loading to surface waters can cause algal blooms and negatively effect fish spawning habitat. Permeable reactive barriers (PRB) are a cost-effective inground passive polishing treatment for onsite wastewater

effluent elevated in nutrients and pathogenic bacteria. This presentation will outline case studies in British Columbia, Canada where PRBs have been utilized to sequester nitrogen (as nitrate) for on-site wastewater systems installed near lake foreshore.

Session title: Degradation of Commercial Hygienic Paper in a Septic Tank Environment (30 min.)

Presenter: Dominic Mercier

Septic users are encouraged to use “septic-friendly” hygienic paper that is generally thinner than traditional paper and quickly dissolved in contact with water. Specialized companies performing septic system pump outs as well as septic system service providers have observed that some toilet papers can cause important

accumulation resulting in premature pump-outs or major blockage, this even if they advertise to be “septic-friendly”. While we would expect that septic-friendly hygienic paper rapidly dissolve in water to settle to the bottom of the tank in small flaky particles, it appears that in some cases, the paper clusters entering the primary tank retain their structural integrity and either accumulate rapidly at the bottom of the tank or in the floating zone of the primary treatment tank. This results in a higher risk of blockage, more frequent need for pumping and potential washouts to the downstream treatment system. Inevitably, operational and maintenance cost of such systems significantly increase. This study has evaluated the behavior of popular brands of hygienic paper in term of degradation in water and potential for blockage. Tests have been performed in clear water as well as in primary effluent environment. Findings of this study may help in better guiding septic system owners in regards to wiser choices or at least inform them more accurately on potential risks and impacts on maintenance frequency and costs.

Session title: The Art (and maybe Science) of Creating a Nitrogen Mass Balance (1 hour)

Presenter: John Buchanan

A mass balance is a fundamental engineering principle. You define a system boundary, measure how much of a constituent moves into and out of the boundary, and the balance is still within the system. Thus, for the land application of wastewater, a mass balance approach should be the ideal means of estimating how much nitrogen will enter the groundwater. However, it is hard to measure what you cannot see. As nitrogen-containing wastewater moves through the soil, the nitrogenous compounds can be converted to ammonia (ammonification), to nitrite/nitrate (nitrification), to protein (organic nitrogen), or to nitrogen gas (denitrification). The biotransformation of these nitrogenous compounds requires certain conditions to exist (i.e., certain electron acceptors/donors, bioavailable carbon). Further, the transformation rate is dependent on environmental factors such as temperature and moisture. Lastly, each of the nitrogenous forms have unique means of crossing the system boundary. Scientists and engineers understand these processes. However, these processes take place in subsurface environment where it is difficult to take measurements. So, if we cannot quantify all the transformations and fates of nitrogen in the soil, is creating a nitrogen mass balance an art form rather than a science? If so, should wastewater professionals

focus on nitrogen removal before the effluent is applied to the soil and/or nitrogen removal via the cover crop and pretend like the soil provides no nitrogen removal

Session title: ULTRON: Electro-Peroxone Process for Degradation of Wastewater Contaminants (30 min.)

Presenter: Leopold Dobelle

Despite the lack of safely managed sanitation and water supply systems, the developing countries with rapid urbanization cannot afford to implement the advanced treatment technologies that are highly centralized, calling for the development of practical onsite wastewater treatment. As an effective yet feasible solution to the water crisis, we have invented an ultra-portable three-stage ozone-assisted nanofiltration (ULTRON) system, which can be provided to individual or small numbers of homes as a decentralized wastewater treatment system. Based on a cost-effective flow-through electrochemical reactor, this system uses an electro-peroxone process to remove chemical oxygen demand (COD) and pathogens from wastewater. Hydrogen peroxide generated by inexpensive carbon-based electrodes (i.e. polytetrafluoroethylene-coated carbon papers) reacts with ozone, producing hydroxyl radicals to treat the influent, which then passes through granular activated carbon filtering as post-treatment. With the help of the strong oxidants, the system achieved a 6-fold log E. coli reduction and 90% reduction in COD for human urine. This system does not need any chemical additive, utilizes the energy-efficient electro-peroxone process, and comprises cheap, accessible components reducing capital and operational costs. The promising results and cost-effectiveness of the ULTRON system show that it can provide a viable solution for the treatment of greywater and human wastewater in low-resource settings.

Session title: Case Study-A SMARTER Way to Treat (30 min.)

Presenter: Charles Otis

The presentation highlights innovative ways to improve decentralized advanced treatment processes which reduce equipment components, vastly reduce maintenance, improve energy efficiency, and allow for intelligent decision making. An integrated fixed-film Moving Bed Biofilm Reactor (MBBR) treatment system has been developed which is scalable from smaller onsite applications to much larger flow applications, and operates via a single air source to provide all aeration, mixing, and pumping processes powered by

the single air source. These revolutionary smart systems have innovations in technology with very few mechanical or electrical moving parts below water, only where required. A case study describes a staged combination of aerated fixed film media and mixing equipment which uses accumulated air to agitate without aerating. The same air-accumulating equipment with modifications is used in pumping in a controlled fashion, which eliminates the need for flow meters and underwater electrical pumps and mixers. The case study features a new and unique combination of equipment used to both remove high strength organic matter to extremely low concentrations (89-98% removal) and reduce nitrogen 59% to near 80%. It also describes installation, operation, and maintenance advantages which are additive and may tend to collectively favor an economic advantage over competitive processes in some cases.

Mini Track: New Regulatory Frontiers - COVID and Reuse

Session title: Development of Regulations for Rainwater Harvesting Systems Incorporating Human Consumption (1 hour)

Presenter: Anthony Creech

Rainwater harvesting is a centuries-old technology providing benefits including control of surface runoff, reduction of strain on surficial aquifers, and provision of clean water. In recent years, rainwater harvesting applications in modern construction tend towards non-potable uses including irrigation and toilet/urinal supply water, and is guided primarily by building codes. The Commonwealth of Virginia in 2018 mandated development of regulations for rainwater harvesting, to include consideration of systems designated to human consumption. In response, the Virginia Department of Health assembled stakeholders to initiate the regulatory process. Rainwater harvesting for human consumption represents a potentially useful tool with respect to onsite sewage treatment, particularly in locations where small lots, private wells, and other factors limit repair options for failing systems. In areas of anticipated sea level rise, rainwater harvesting systems for human consumption represent possible means to replace water from wells damaged by inundation or salt water intrusion, particularly where public water supply systems are not an option. This presentation will summarize efforts to develop a rainwater harvesting regulation for human consumption, and identify critical

components of rainwater harvesting, particularly as pertaining to decentralized wastewater systems.

Session title: Turning Human Waste into Fuel and Disinfected Water (1 hour)

Presenter: Ed Osann

Non-Sewered Sanitation Devices - A new ISO Standard for a Reinvented Toilet Delegates from Canada, the US, and some 30 other countries have been collaborating for the last two years to develop a new ISO standard for non-sewered sanitation devices. Intended to meet critical public health needs in developing countries with limited water and wastewater infrastructure, this new standard also carries important implications for water and wastewater management in North America. From national parks to suburban shopping malls, high-tech toilets meeting the new ISO standard could upend our approach to sanitation and our expectations about future water demands and water-related infrastructure. This presentation will consist of three parts: a) a brief discussion of the vision behind a “reinvented” toilet; (b) an outline of the forthcoming ISO Standard 30500, including scope, performance requirements, and test procedures; and (c) an overview of some of the technologies and approaches that are currently in development and field testing. Participants will be challenged to consider where, in their own community, sanitation devices that require no permanent connection to water and sewer lines would fill a useful purpose.

Session title: Septic System Installation Permitting and Inspector During a Pandemic (1 hour)

Presenter: Chris LeClair

Maintaining normal permitting and inspections is crucial during this pandemic to make sure that the economy continues. This discussion will detail the subtle changes that were made in a small, northern Minnesota county during the COVID-19 pandemic to ensure that septic systems continued being permitted and inspected while at the same time ensuring the health and safety of county staff and contractors

Mini Track: Tanks and More

Session title: Understanding Tank Buoyancy (1 hour)

Presenter: Kayla Hanson

There are many forces at work on underground wastewater treatment structures. Buoyancy is one of those forces, and can be significant enough to lift a tank out of the ground. Buoyancy is an essential consideration of underground tank design. During this

presentation, we will first explore the concept of buoyancy to understand how it works. We will demonstrate the calculation of buoyant forces on a typical precast concrete septic tank under different conditions. We will then talk about countermeasures that can be taken to ensure the buoyant force never exceeds the downward forces. This is essential information for those who design, manufacture, install, regulate, and inspect underground wastewater structures.

Session title: Keeping What's In In and What's Out Out (1 hour)

Presenter: Kayla Hanson

Strong, durable, watertight tanks are an essential component of every onsite wastewater system. To achieve effective, efficient, and reliable treatment, tanks must be designed to excel in the conditions they'll be exposed to during their service life. Watertightness is a characteristic that depends on the quality of the concrete, the tank's joints and sealants, the pipe

connections, and the riser sections. During this session we will examine each of these crucial areas and discuss what goes into making precast concrete tanks watertight. We will also review what mistakes could lead to leaking and what manufacturers and installers are doing, or should be doing, to avoid these issues. We will also touch on some basics of concrete, including its ingredients, how and why concrete hardens, and how it behaves over time. Lastly, we will discuss watertightness testing by the hydrostatic method and the vacuum method.

Session title: Wastewater Treatment Myths (1 hour)

Presenter: Allison Blodig

Some of the mistakes that are made in designing treatment systems are based on a few common misconceptions or myths about wastewater treatment. This presentation will discuss these misconceptions or myths and how they can make the difference in a system's long term performance.

Wednesday, November 18, 2020, 2:00 pm – 4:00 pm

Mini Track: Nitrogen

Session title: Urine Diversion for Onsite Removal of Nitrogen and Pharmaceuticals (1 hour)

Presenter: Abraham Noe-Hays

Urine diversion is an alternative to advanced onsite treatment that can remove nutrients and pharmaceuticals with lower cost, less site disruption, and lower electricity consumption, while producing a valuable fertilizer. Rather than combining all domestic wastes into one stream and then treating the entire dilute volume, the source separation of urine eliminates the great majority of nutrients and about half the pharmaceuticals before they even enter the mix. The urine is collected using commercially-available urinals or urine-diverting toilets, which are plumbed to onsite storage tanks. In existing pilot installations, urine is then collected twice a year by pumper truck, treated at a central facility, and delivered to farms for use as fertilizer. Researchers at the Rich Earth Institute and the University of Michigan are currently testing an onsite treatment system that uses freeze concentration and pasteurization to produce a small volume of sanitized fertilizer that is suitable for direct use without further treatment. This innovation will enable urine diversion systems to be installed and operated independently of any larger processing infrastructure. This ongoing project is conducted using two real-world test

platforms: public restrooms at the University of Michigan with urine-diverting fixtures connected to an experimental processing facility, and the Rich Earth Institute's community-scale Urine Nutrient Reclamation Program in Vermont.

Session title: Basic Nitrogen Treatment Principles in Wastewater Systems with Blodgett Landing Case Study (1 hour)

Presenter: Dave Lentz

Have you ever wondered how nitrogen in domestic wastewater is biodegraded in an onsite wastewater treatment system? The nitrogen cycle plays a key role in nitrogen removal from domestic wastewater, requiring specialized processes and equipment to complete the treatment process. Part 1 of this presentation uses a multi-media format to cover the elemental steps required to complete the decomposition pathway within an onsite wastewater treatment system. Discussion topics include the basic elements of wastewater chemistry, microbes, and chemical treatment processes. The session will begin with an informative video on the nitrogen cycle, followed by an explanation of the associated nitrification and denitrification concepts, and end with an interactive quiz-show game that will put your nitrogen-cycle knowledge to the test. Part 2 covers a

real-life example from Blodgett Landing, New Hampshire.

Mini Track: Standards and Measures

Session title: In-situ Liquid Storage Capacity Measurement of Subsurface Wastewater Absorption System Products (30 min.)

Presenter: Philip Brown

A method is presented for measuring in-situ liquid storage capacity of subsurface wastewater infiltration system (SWIS) products. These products vary in composition, geometry, and porosity, but all function as a conduit for effluent flow from the septic tank to and through a trench allowing infiltration into the soil. SWIS's also provide temporary liquid storage; necessary when discharge exceeds infiltration rate, and important during periods of soil saturation. Many regulations pertaining to storage volume are based on traditional gravel-pipe systems. Storage comparisons between alternative products and gravel have been difficult as no standard method exists. Some products have been evaluated under field conditions; others under theoretical or ideal conditions. Protocols developed in this study could serve as a common, accurate basis for comparisons. A 3 ft deep trench was excavated and leveled. Markers were attached to products indicating invert and full-volume. Products were enclosed in plastic, put in a trench, and covered with soil. A pipe extended to the surface allowing metered water additions and determination of system capacity. Four plastic chambers, three expanded polystyrene (ESP) products, two multipipe systems, and a gravel-pipe system were evaluated. Three plastic chambers stored 100-130%, multipipe systems held 80-90%, and ESP bundles held 75% of the standard. These differences illustrate the need for a standard protocol for measuring storage volume.

Session title: A study on BODs (30 min.)

Presenter: Jim King

This presentation is a study of various common household waste and what is the corresponding BOD strength. We will compare 15 to twenty household items to include, soda, coffee, juice, ice cream and other easily liquefied material. The current list: Coke Soda , Mountain Dew Soda , Red Bull Soda , Budweiser Light Beer , Tree House Haze Beer, 2% Milk , Light Cream, Orange Juice , Wine , Ice Cream , Oil, Coffee Black, Coffee with Cream and Sugar. The goal is to use items that are found throughout the US so this test can

be duplicated anywhere. Further research will investigate the impact on the use of these items on a daily basis.

Session title: Panel Discussion - NSF Standards- Past, Present and Future (1 hour)

Presenter: Ron Suchecki Panel Chair

A panel of NSF Joint Committee Members, representing Industry, Regulatory and User categories of the NSF Joint Committee on Wastewater will be leading a discussion on NSF Standards. During this presentation, we will discuss the results of a nation-wide survey on the Standard 40, and provide an overview for Standard 40, 41, 285, 350 and other lesser known and developing standards. In addition to the above topics, there will be updates on the changes we have been incrementally making (foreword, upsizing criteria as examples) a discussion of the current obstacles (in-ground Standard 40's, High Strength Standard development), and the direction things are going (ultra-low use, split gray/blackwater systems) and have time for feedback and interaction with the audience.

Mini Track: Treatment Topics

Session title: Combined Treatment and Dispersal (CTD) Systems: What, How and Why (1 hour)

Presenter: Dick Bachelder

Combined treatment and dispersal (CTD) systems are an option for both residential and large flow onsite wastewater treatment and dispersal challenges. This presentation focuses on passive, sand-based CTD systems (there are others, such as peat-based CTDs, for example); including what they are, how they function, and why they are increasingly becoming another valid solution for wastewater management professionals, particularly with respect to difficult sites. The presentation concludes with an overview of the proprietary technologies in use in the United States and Canada today.

Session title: Eco-Responsible Solution for Onsite Wastewater Treatment: Comparative Life Cycle Analysis (1 hour)

Presenter: Marie-Christine Belanger

In 2017, a life cycle analysis (LCA) was carried out in France according to the requirements of ISO 14044, in order to compare the ecological footprint of different types of onsite wastewater treatment systems for unsewered residences. The LCA covers all stages of a

product's life: from the production of raw materials to the disposal of all end-of-life components, through the manufacturing of all components, their installation, their use and maintenance, and all rejects to the environment. The first adaptations of this study to the North American context show the same trends as the original study, i.e., significant variations in carbon impacts depending on the materials used, the energy required, the distances travelled and the transportation mode of the materials. Although the scale of CO₂ emission associated to wastewater treatment for a single residence is relatively small, the

overall impact is significant considering that 25% of the population in North America is off-grid. In addition, since sand is traditionally the preferred material for onsite wastewater treatment, its increasing scarcity and its non-renewable nature, combined with the high CO₂ emissions associated with its transportation, amplifies this overall impact. The study shows that there are very interesting renewable substitutes (e.g. coconut fragments) that significantly reduce this carbon footprint.

SPEAKER BIOGRAPHIES

Dick Bachelder

Dick has been in the plastic leaching chamber business for 30 years. He onsite career started when he joined PSA, Inc., the company which developed the BioDiffuser line of plastic leaching chambers. He joined Advanced Drainage Systems (ADS) in 2000 and worked for 13 years on ADS's Arc line of chambers before joining Infiltrator Water Technologies (Infiltrator) in 2013. Dick's primary focus over the years has been on product approval development and management, as well regulation development. Dick's industry involvement includes three years of service on the Ohio Department of Health's initial Technical Advisory Committee. He is a founding member of the National Onsite Wastewater Recycling Association (NOWRA) and is presently a voting member of the Canadian Standards Association's (CSA) B65 Technical Subcommittee on onsite wastewater system design and installation, as well as a Director of the Yankee Onsite Wastewater Association (YOWA).

Marie-Christine Belanger

Marie-Christine Belanger is the current Product Director and Government Relations at Premier Tech Aqua (PTA), a Canadian company and world leader in the Onsite Wastewater Treatment industry. She accumulated over five years of professional experience as a Project Manager for the development and implementation of decentralized wastewater treatment systems for GSI Environnement before pursuing a career as Project Development Director at Group Celdex, a firm specializing in the development of integrated Waste Management programs in emerging countries. Ms. Belanger joined PTA in 2002. Her functions at PTA have brought her to play key roles on several steering and advisory committees throughout North America, namely with the BNQ, CSA, NOWRA, NSF, local provincial and state organizations, etc. where she has taken part in the development and advancement of industry-wide regulations and standards leading to better protection of the environment and the public's health.

Allison Blodig

Allison has been in the onsite wastewater treatment industry since 1997, first as a regulatory official and then in the wastewater treatment manufacturing industry participating in sales, regulatory affairs, design reviews, and training for a national treatment system manufacturer. Currently she is an Engineered Systems Specialist with Infiltrator Water Technologies, a leading developer of decentralized wastewater treatment technology. Along with a degree in Biology from Benedictine College in Atchison, KS, she has been a Registered Environmental Health Specialist and member of the National Environmental Health Association since 1996. She is also very active with the National Onsite Wastewater Recycling Association (NOWRA) and is the current chair of the Conference Committee.

Michael Broussard

Michael G. Broussard has a BS in Chemistry / Bio-Chemistry and is a 10 year military veteran with 12 years' experience in New Mexico's liquid waste program with the Environmental Health Bureau (EHB). He has instructed hundreds of staff, installers, and realtors in liquid waste disposal and treatment regulations over the past 6 years. He currently serves as the state's liquid waste program manager providing support to the bureau's 75 field staff and management. Michael has conducted technical reviews for advanced wastewater treatment systems structural reviews on treatment tanks for 5 years. He currently serves as a member and technical committee member for the American Society of Testing and Materials (ASTM). He is member of the International Association of Plumbing and Mechanical Officers (IAPMO).

Philip Brown

Philip Brown is the Extension Specialist in Soil Science and Septic System Education at Virginia Tech. He obtained a PhD in soil physics from Clemson University, specializing in water movement in porous media. He also has an MS from Clemson University and a BSc from The University of Bradford in the UK.

John Buchanan

Dr. John R. Buchanan is an Associate Professor and is on the faculty of the Biosystems Engineering and Soil Science Department at the University of Tennessee. He has 30 years of teaching, research, and outreach experience in the areas of onsite and decentralized wastewater management, water supply, water quality and storm water engineering. Dr.

Buchanan has B.S. and M.S. degrees in Agricultural Engineering and a Ph.D. in Civil Engineering, all from The University of Tennessee. John is a member of the Water Environment Federation, Soil and Water Conservation Society, NOWRA, and the American Society of Agricultural and Biological Engineers. He is a registered professional engineer in Tennessee.

Anthony Creech

Mr. Creech has over 30 years' experience in regulatory program oversight, environmental health management, and risk management. In his role as Environmental Technical Programs Manager for the VDH Office of Environmental Health Services, Division of Water and Wastewater Services, Mr. Creech leads efforts for training of Environmental Health Specialists in Virginia's onsite sewage and private well programs; leads stakeholder workgroups responsible for regulatory development (e.g., Private Well Regulations update, Rainwater Harvesting Regulations); participates in the Virginia legislative processes; and participates in a wide variety of waste, wastewater, and drinking water initiatives. Over his career, Mr. Creech has provided general environmental consultation in solid, hazardous, and medical waste; environmental due diligence, petroleum storage and management; groundwater/surface water management and conservation; and groundwater withdrawal permitting. Mr. Creech has a B.S., in Geology.

Victor D'Amato

Victor D'Amato is a registered professional engineer with over 26 years of water quality engineering, wastewater process design, and applied environmental research experience. He has a BS in Civil Engineering from Penn State and an MS in Environmental Engineering from the University of North Carolina at Chapel Hill. Vic has extensive experience with decentralized water infrastructure planning and implementation. He routinely works with public and private sector clients to develop wastewater management plans and programs, design systems and provide ongoing operational support. He has experience reducing nutrient pollution at multiple scales ranging from individual sites to large watersheds, including the Chesapeake Bay watershed. Vic is currently Vice Chair of the Small Community Committee of the Water Environment Federation (WEF).

Leopold Dobelle, Seungkyeum Kim

Leopold Dobelle is an Assistant Research Engineer at Linde Robinson Lab in Pasadena, CA. Seungkyeum Kim is a third-year Ph.D. candidate in Dr. Michael R. Hoffmann's laboratory at the California Institute of Technology. His research is concerned with the development of commercially-ready water and wastewater treatment system for individual home use in the developing world. He has specifically focused on testing the prototype of onsite treatment system and designing more efficient, cost-effective electrocatalysts for the system. He earned his B.S. in Chemical Engineering from the University of California, Los Angeles.

Mark Elliott

Mark Elliott, Associate Professor in Environmental Engineering at the University of Alabama, works at the intersection of water, wastewater and public health in low-resource settings. His doctoral and post-doctoral research addressed issues primarily in developing countries and his recent work focuses largely on wastewater management in the rural United States.

Heidi Faller

Heidi Faller is an environmental toxicologist with the U.S. Environmental Protection Agency's Office of Wastewater Management (OWM) in Washington, D.C. She is a part of the Decentralized Wastewater Management team which manages the EPA Decentralized MOU Partnership, SepticSmart Program and provides outreach on decentralized technology for homeowners.

Bruce Fox

Employment: Partner – Allstate Septic Systems LLP, (General Manager) Since April 15, 1986 Affiliations: Pennsylvania Septage Management Association -- President, Past Secretary, Past president, Past Chair Education Committee, Member Education Committee, Delegated Member DEP – SAC (Sewage Advisory Committee), Certified PSMA Trainer – Inspection Program (since 1991), Certified NOF/PSMA Trainer – (Vacuum Truck Technician Certification Program - since 2005), PSMA Trainer – DEP, PASEO, PSMA Installer Course. National Association of Wastewater Technicians – President, Vice

President, Member Education Committee. Consortium of Institutes for Decentralized Wastewater Treatment – NAWTDelegate – Member Executive Board of Directors Certified Trainer - CIDWT Installer Training Program – since 2009. Pennsylvania Association of Sewage Enforcement Officers -- S.E.O. #02175. Pennsylvania Water Environment Association. Water Environment Federation. Pennsylvania Sewage Treatment Plant Operator – T2614 Class E, Type 1. Education: Delaware Valley College of Science and Agriculture.

Lance Gregory

Lance Gregory is the Director for the Division of Onsite Sewage and Water Services, Environmental Engineering, and Marina Programs. His Division works with Virginia's 35 Health Districts and industry stakeholders to develop and implement regulations related to onsite sewage systems, alternative discharging systems, private wells, and marinas. Lance has worked in a variety of positions within VDH's onsite sewage and water programs at the local, district, and central office level providing a useful.

Kayla Hanson

Kayla graduated from Purdue University in 2013 with a B.S. in Civil Engineering and emphasis in structures. Kayla is NPCA's Director of Technical Services and has been with the association for nearly 7 years. Kayla serves as the staff liaison to NPCA's Wastewater Treatment Product Committee and Grease Interceptor Task Force, and works with these groups to address challenges and opportunities in the onsite wastewater industry. Kayla serves as the Vice Chairman of ASTM Committee C27 on Precast Concrete Products and is actively involved in creating and updating precast-specific wastewater structure standards.

Gary Hawkins

Gary L. Hawkins, Ph.D., is an assistant professor and extension specialist in Water Resource Management at the University of Georgia. He graduated from Clemson University and Auburn University with degrees in Agricultural Engineering. Hawkins earned his Ph.D. from The University of Tennessee in Biosystems Engineering. Hawkins' extension and research programs focus on water quality and quantity in the areas of on-site waste management, stormwater and water conservation.

Sara Heger

Dr. Sara Heger is an engineer, researcher and instructor at the University of Minnesota in the Onsite Sewage Treatment Program in the Water Resources Center and is an Adjunct Assistant Professor in the Bioproducts and Biosystems Engineering Department. For over 20 years, she has been conducting research and providing education and technical assistance to homeowners, small communities, onsite professionals and local units of government regarding onsite wastewater treatment. She has presented in over 30 different states and provinces in North America regarding the science of wastewater treatment including design, installation and management. Sara is the president-elect of the National Onsite Wastewater Recycling Association. Sara serves on the NSF International Committee on Wastewater Treatment Systems. She has BS in Biosystems & Agricultural Engineering and a MS and a PhD in Water Resource Science.

Trisha Henshaw

Trisha Henshaw has two decades of regulatory experience, most of it obtained at the Department of Professional and Occupational Regulation. She has served as an Executive Director for DPOR since 2008. In this role, Trisha provides administrative, regulatory, and operational management for the Common Interest Community Board; Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals; and the Board for Asbestos, Lead, and Home Inspectors. Trisha is actively involved in the legislative process for legislation impacting the programs under her purview. Trisha has worked in nearly every role at the Department of Professional and Occupational Regulation related to board and licensing operations. Prior to her current responsibilities, Trisha administered the tradesmen education program and the licensing aspects of the Board for Contractors as well as a number of other boards.

Naomi Huff

Naomi Huff is an ORISE at EPA's Office of Wastewater Management (OWM), located in Washington, DC. Naomi has been

with EPA since December 2019 and supports the Decentralized Wastewater Program. Prior to her employment as an ORISE, Naomi worked as an AmeriCorps Vista in St. Louis Missouri. Naomi holds a BS in Environmental Studies from Northern Illinois University and a MS in Environmental Science from Southern Illinois University Edwardsville.

Anish Jantrania

Dr. Anish Jantrania is an Associate Professor/Extension Specialist in the Biological & Agricultural Engineering Department at Texas A&M University. Texas. Dr. Jantrania has over 30 years of experience working in the wastewater industry, in the public and private sectors, with a focus on On-Site Sewage Facilities (OSSF/septic systems), and decentralized wastewater and water systems. His research and extension interests focus on sustainable infrastructure to ensure the availability of clean water to meet society's water demands, and to ensure safe sanitation to protect public health and environmental quality. Before coming to Texas, Anish has worked in Virginia, Massachusetts, and West Virginia, and has studied in West Virginia, South Carolina, Ohio, and India. His work in Texas focuses on developing a statewide extension education and research program related to surface and groundwater quality protection with specific emphasis on non-point sources, OSSF, and other environmental issues.

Jim King

Jim King is the President for Eljen Corporation. He finished his engineering degree at the University of Connecticut and joined the military. Mr. King was a Captain in the US Army, serving two deployments to Iraq. After his military career, he returned to Connecticut where he finished his MBA at the University of Connecticut and found a home at Eljen. During his time at Eljen, Jim brought the company to new regions around the world by working with the local and state health departments. His work at Eljen focuses new technologies innovation and development. Based in Windsor, CT, Eljen produces products which are installed throughout the world. In 2019 they were awarded the Federal HireVETS Small Business Platinum Award. Eljen is celebrating over 50 years of innovation and success and look forward to being a part of your future septic projects.

Chris LeClair

Chris LeClair is the Director of the Land & Resource Management office in Otter Tail County, Minnesota. After graduating from the University of Minnesota with a degree in Natural Resources, Chris began his career with the Washington County Department of Public Health as an Environmental Health Specialist, duties included restaurant inspections, lodging and pool inspections and managing the county's radon laboratory. In 2002, he was moved to the county's septic program. Since then, Chris has become a certified Advanced Inspector, served on the Minnesota Onsite Wastewater Association Board of Directors and the state's septic advisory committee. In 2018, Chris moved up to northern Minnesota to head the office that regulates septic systems, where he finds himself today.

David Lentz

Dave Lentz manages Infiltrator Water Technologies' government affairs department, with responsibility for regulation of the company's effluent dispersal, tank, and treatment product lines. Nationally, Infiltrator is involved in rulemaking, legislation, and industry standards development supporting the onsite wastewater treatment system industry. Dave has 25 years of experience related to soil and groundwater systems. He holds a Bachelor's degree in structural engineering and a Master's degree in geotechnical engineering, and is a licensed professional engineer.

Zachary Lowenstein

Zach Lowenstein is an Environmental Scientist in EPA's Office of Wastewater Management, located in Washington, DC. Zach has been with EPA for over three years, and manages the Decentralized Wastewater Program. Prior to his employment at EPA, Zach worked for a couple of years in permit compliance at the South Florida Water Management District, and before that, as an environmental scientist at a small consulting firm. Zach holds a Bachelor's in Environmental Science and Master's in Public Health, both from the University of Florida.

Gary MacConnell

Mr. MacConnell has over thirty years of experience in environmental and civil engineering, during which he has served in project manager and project engineer capacities. He has played a major role in projects that include wastewater, water,

and industrial waste treatment. Other types of projects have included: solid waste, hazardous and toxic wastes, environmental issues, stormwater, water resources, site work, irrigation, project financing, and economic and financial analyses. Examples of tasks that Mr. MacConnell has performed include planning, preliminary design, final design, permitting, grant/loan related work, financing, and construction administration. Mr. MacConnell started his career as a regulator in the State of Florida. He then worked for international firms in Florida, California, and North Carolina. Since starting MacConnell & Associates, P.C., Mr. MacConnell's technical expertise and innovative designs helped the company win projects.

Bryer Manwell

Bryer Manwell is a registered professional engineer in both Alberta and British Columbia. Currently, Bryer serves as the President of WCOWMA-Onsite Wastewater Management of BC, where she promotes implementation of environmentally sound practices within the onsite wastewater sector. With her environmental engineering background, Ms. Manwell has applied her hydrogeological expertise to projects involving: environmental monitoring for community water supply systems and landfill sites, groundwater supply evaluations, mine site water balance evaluation, onsite wastewater system design, aquifer characterization, solute transport analysis, groundwater at risk of containing pathogens (GARP) assessments, and source water protection planning. Facilitating groundwater licencing applications and liaison between regulators and clients further rounds out Ms. Manwell's core practice areas.

Dominic Mercier

Dominic Mercier is a Civil and Environmental Engineer with 24 years of experience in technology development and design of onsite and decentralized wastewater treatment systems. Mr. Mercier owns Enviro Neptune, a company dedicated in the research and development of onsite and decentralized technologies as well as Enviro-STEP Technologies a company manufacturing and distributing Onsite solutions. With offices in Quebec, Manitoba and Nova Scotia, Mr. Mercier was involved in hundreds of projects and had presented several workshops and technical talks in various Canadian and American conferences.

Abraham Noe-Hays

Abraham Noe-Hays is the Research Director of the Rich Earth Institute, which operates the nation's first community-scale urine recycling program, converting human urine into fertilizer for use on local farms. This initiative saves water, prevents pollution, and supports sustainable agriculture by turning a universal waste product into a valuable resource. Abraham coordinates a multidisciplinary research and demonstration effort involving farmers, scientists, planners, and volunteer participants (aka urine donors"), with the goal of developing tools to allow other communities to start recycling urine. A lifelong resident of Vermont, he has used alternative sanitation systems since 1976, and has been academically and professionally involved in their development since 2000. He holds a BA in Human Ecology from the College of the Atlantic.

Ed Osann

Ed Osann is a Senior Water Policy Analyst with the National Resources Defense Council's Healthy Communities Program. Since 2009 he has led NRDC's work on water efficiency through building codes, product standards, utility programs, and conservation pricing. From 1993 to 1996, he served as Director of Policy and External Affairs for the US Bureau of Reclamation. Ed holds a master's degree in Urban and Regional Planning from George Washington University and a BS in International Relations from Georgetown University. From 2013-16, Ed served on the 7-member Independent Technical Panel on Urban Conservation for the California Department of Water Resources. In 2016, Ed joined ISO Project Committee 305 to develop a product standard for Sustainable Non-Sewered Sanitation Systems, serving as head of the US delegation to this committee.

Sushama Pradhan

Sushama Pradhan is the Nonpoint Source Pollution Control Program Coordinator at the On-site Water Protection Branch in North Carolina Department of Health and Human Services. She got her Doctoral degrees in Soil Science at the North Carolina State. Prior to joining NC DHHS, she has worked as a scientist in the on-site wastewater field for nearly 12 years in North Carolina State University. Dr. Pradhan has successfully managed/completed numerous multidisciplinary

projects including on-site system field performance surveys, modeling septic systems derived nutrient loadings in watershed scales, performance evaluation of new technologies and decentralized water/wastewater reuse for non-portable usages.

Danna Revis

Danna began working in the onsite wastewater in Virginia in 1983 as a private soil consultant. She worked for the Virginia Department of Health for 30 years as an Environmental Health Specialist and as Training Coordinator for Environmental Health. She retired in 2018 and went back to the private sector. She currently works for Old Dominion Onsite, Inc. as an onsite soil evaluator and operator. She has a bachelor's degree in geology from the College of William and Mary and a masters in learning technologies from Pepperdine University.

Kevin Sherman

Kevin Sherman received a B.S. from the Stony Brook University (NY) and a B.S. in civil engineering from the FAMU/FSU College of Engineering. Kevin has a M.S. in Biology from the University of South Carolina, and a M.P.H. from the University of South Florida. He also has a Ph.D. in from Florida State University. Dr. Sherman worked with the Florida Department of Health for fourteen years, including 3 year as administrator of the onsite sewage program. Dr. Sherman served as the Executive Vice President of the Florida Onsite Wastewater Association. Currently, he is Director of Engineering and Regulatory Affairs for SeptiTech, Inc. Dr. Sherman is author or co-author of over 25 publications. He is a past-president of the Florida Environmental Health Association and the NOWRA. He is a Professional Engineer in seventeen states and a Registered Sanitarian in Florida. In 2007, he received a diplomat of Water Resource Engineering honor by the American Society of Civil Engineering.

Larry Stephens

Larry has spent over 50 years now in the onsite wastewater treatment industry, beginning as a state regulator for 12 years and then as the owner of Stephens Consulting Services, PC for the last 40 years. Stephens Consulting Services is a design engineering company located in Haslett, MI. Onsite wastewater treatment systems, both large and small, have become his focus and specialty. Larry is also a partner with Michael Stephens in a second company, SCS Systems LLC, a 20 year old company that provides contract operations and maintenance services for onsite systems. Larry holds a B.S. in Civil Engineering from Michigan State University and a Masters of Engineering from the University of Florida. He is a registered professional engineer in Michigan and Ohio. Larry is active and has held leadership positions in both the Michigan Onsite Wastewater Recycling Association and NOWRA.

Ron Suchecki

Ron Suchecki is the General Manager for Hoot Systems, LLC. He also serves as the company's Director for Research. Ron has extensive experience on onsite wastewater treatment systems and serves on the NSF Joint Committee for Wastewater. He is also heavily involved in organizing the annual meeting for the Texas Onsite Wastewater Association. Mr. Suchecki has made presentation at regional and national meetings organized for stakeholders of the onsite wastewater industry.

Lorna Withrow

Lorna Withrow is an engineer with the On-Site Water Protection (OSWP) Branch of the North Carolina Department of Health and Human Services (NCDHHS) and has worked for the State of North Carolina in the environmental field for over 25 years. Her experience covers numerous environmental areas including radiological waste disposal, drinking water compliance, assessment and analysis, enforcement, and guidance generation. Lorna is a licensed North Carolina Professional Engineer, holds a B.S. degree in Applied Mathematics with a Nuclear Engineering concentration and an M.C.E. degree in Environmental Engineering, both earned at North Carolina State University.

June Wolfe

Dr. June Wolfe directs the Water Science Laboratory at Texas A&M AgriLife Research Blackland Research and Extension

Center in Temple. His lab conducts basic and applied research in water conservation and management with an emphasis on investigating erosion and sedimentation caused by stormwater runoff and land disturbance. Water quality and water quantity information from field instrumentation, telemetry and analytical analyses are linked with computer simulation modeling developed at the Center to determine aquatic and land condition trends and the effectiveness of various land management practices. He has been involved in wastewater research since 1995.

Cory Yarrington

Cory Yarrington graduated with a B.S. in Physical Sciences at Bethany College, WV. He co-authored a published journal, "The American Society for Mechanical Engineers" after his work at the National Energy Technology Lab in Morgantown. He has been working on his M.S. and PhD at West Virginia University in the Civil & Environmental Engineering Department in areas of linear and nonlinear modeling to forecast univariate patterns. A team, composed of Dr. Lian-Shin Lin, Cory Yarrington and Chris Anderson, has been working with Jennifer Hause at National Environmental Science Center to complete an assessment on onsite wastewater treatment systems. The objective was to conduct a national assessment of onsite wastewater system installations at the state and local levels over the period of four years (2015-2018). The data was utilized to determine trends in onsite wastewater system infrastructure installation with relation to new housing as well as onsite system maintenance across the U.S.

Fred Yuhasz

Fred spent the first 30 years of his career driving trucks. He grew a very successful vehicle towing and salvage business from the bottom up, eventually selling that business to his unsuspecting (of the work involved!!!) younger brother. Along the way, he has put thousands of miles under his belt hauling heavy equipment. Currently, and for the past 10 years, Fred is putting these years of experience to good use as a CDL Instructor/Examiner certified by the Commonwealth of Pennsylvania. Fred can be found at the North Montco Tech Career Center in Lansdale, Pennsylvania either in the classroom or out in the field examining another new CDL candidate.



Agenda

November 16-18, 2020



Monday, November 16, 2020

Opening General Session

9:00 am - 11:00 am	Conference Welcome Remarks -- Carl Thompson, <i>NOWRA President</i>
	EPA Update -- Andrew Sawyers , <i>US Environmental Protection Agency Office of Wastewater</i>
	USDA Update -- Edna Primrose , <i>US Department of Agriculture, Rural Development</i>
	Industry Lobbying Review -- Alan Wheat , <i>Chair, Public Policy Practice, Polsinelli, LLC</i>
	Chesapeake Bay Cleanup and Onsite Systems -- Ann Jennings , <i>Deputy Secretary of Natural Resources for the Chesapeake Bay, Commonwealth of Virginia</i>
11:30 am - 1:30 pm	Expo Hall Open - Talk Live with a Supplier!

Afternoon Concurrent Sessions

Mini-Track	Planning	Regulatory Issues	Regulation in Virginia
2:00 pm - 3:40 pm	Planning for Sustainability: Case Studies for Improved Wastewater Decision-Making, Victor D'Amato (50 min.)	Property Transfer Evaluations in New Mexico since 2005, Managing the Process and Changes-the Good, the Bad & the Ugly, Michael Broussard (50 min.)	Identifying Wastewater Infrastructure Needs for the Commonwealth, Lance Gregory (25 min.)
	National Assessment of Onsite Wastewater Treatment Systems 2015-2018, Cory Yarrington (25 min.)	Wastewater Islands and Onsite O&M, Danna Revis (50 min.)	Virginia Onsite Sewage System Professionals Licensing Updates, Trisha Henshaw (25 min.)
	Straight Pipes in the US: Scope, Impacts and Solutions, Mark Elliott & Jillian Maxcy Brown (25 min.)		Department of Health - State Program Update, Lance Gregory (50 min.)
3:40 pm - 4:00 pm	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers
5:00 pm - 6:30 pm	Social Event - Virtual Happy Hour w/Vendor Breakout Rooms!		



Draft Agenda

November 16-18, 2020



Tuesday, November 17, 2020

Morning Concurrent Sessions

Mini-Track	COVID-19 and Wastewater	Funding & Program Assessment	CDL and Vac Truck Training
9:00 am - 11:30 am	Impacts of COVID-19 on the Decentralized Industry and Regulatory Programs, <i>Sara Heger and Chris LeClair</i> , (50 min.)	Online Classes: 4th Bridesmaid or Golden Ticket, <i>Kevin Sherman</i> (25 min.)	NAWT Vacuum Truck Technician Training, <i>Bruce Fox</i> (1 hour 40 min.)
		Onsite Wastewater Research Funding - Texas Model, <i>Anish Jantrania</i> (25 min.)	
	Panel Discussion: Just One More Worry - 11 Company Wastewater Owner/Operators from Across the US and Canada Discussing Issues During this Pandemic, <i>Moderator: Cindy Tiemann</i> , (1 hour and 40 min.)	Onsite Wastewater Research at Texas A&M University, <i>June Wolfe</i> (25 min.)	
		Macroinvertebrates as Indicators of Septic System Density, <i>Gary Hawkins</i> (25 min.)	
		Transitioning of Design Services - Virginia's Experience, <i>Lance Gregory</i> (25 min.)	CDL and DOT requirements for pre-/post-trip inspection, <i>Fred Yuhasz</i> (50 min.)
11:30 am - 12:00 pm	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers
12:30 pm - 2:00 pm	Expo Hall Open - Talk Live with a Supplier!		

Afternoon Concurrent Sessions

Mini-Track	Reuse Technology	EPA Updates	Alcohol & Wastewater
2:00 pm - 3:40 pm	Fenner Nature Center Wastewater Treatment and Re-Use Project, <i>Larry Stephens</i> (50 min.)	EPA's Decentralized Wastewater Program Update, <i>Heidi Faller</i> (25 min.)	Wastewater in Brewing, <i>Jim King</i> (50 min.)
		Pathways to Success for Funding Decentralized Systems with the Clean Water State Revolving Fund, <i>Naomi Huff</i> (25 min.)	
	Reuse Comes to On-Site Systems, <i>Gary MacConnell</i> (50 min.)	EPA's Decentralized Wastewater Workforce Update, <i>Zach Lowenstein</i> (50 min.)	Identifying Challenges of Alcohol Processing Wastewater, <i>Lorna Withrow and Sushama Pradhan</i> (50 min.)
3:40 pm - 4:00 pm	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers
4:00 pm - 5:00 pm	NOWRA Annual Business Meeting		
5:00 pm - 6:30 pm	Social Event - Virtual Wastewater Jeopardy! Via Zoom		



Draft Agenda

November 16-18, 2020



Wednesday, November 18, 2020

Morning Concurrent Sessions

Mini-Track	Innovative Thinking	Reuse Regulation & Standards	Tanks and More
9:00 am - 11:30 am	Use of Permeable Reactive Barriers for Passive Nitrate Removal from Onsite Wastewater Effluent, <i>Bryer Manwell</i> (25 min.)	Development of Regulations for Rainwater Harvesting Systems Incorporating Human Consumption, <i>Anthony Creech</i> (50 min.)	Understanding Tank Buoyancy, <i>Kayla Hanson</i> (50 min.)
	Degradation of Commercial Hygienic Paper in a Septic Tank Environment, <i>Dominic Mercier</i> (25 min.)		
	The Art (and Maybe Science) of Creating a Nitrogen Mass Balance, <i>John Buchanan</i> (50 min.)	Turning Human Waste into Fuel and Disinfected Water, <i>Ed Osann</i> (50 min.)	Keeping What's In, In and What's Out, Out, <i>Kayla Hanson</i> (50 min.)
	ULTRON: Electro-Peroxone Process for Degradation of Wastewater Contaminants, <i>Leopold Dobelle</i> (25 min.)	Septic System Installation Permitting and Inspector During a Pandemic, <i>Chris LeClair</i> (50 min.)	Wastewater Treatment Myths, <i>Allison Blodig</i> (50 min.)
	Case Study-A SMARTER Way to Treat <i>Charles Otis</i> (25 min.)		
11:30 am - 12:00 pm	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers
12:30 am - 2:00 pm	Expo Hall Open - Talk Live with a Supplier!		

Afternoon Concurrent Sessions

Mini-Track	Nitrogen	Standards and Measures	Treatment Topics
2:00 pm - 3:40 pm	Urine Diversion for Onsite Removal of Nitrogen and Pharmaceuticals, <i>Abraham Noe-Hays</i> (50 min.)	In-situ Liquid Storage Capacity Measurement of Subsurface Wastewater Absorption System Products, <i>Philip Brown</i> (25 min.)	Combined Treatment and Dispersal Systems: What, How and Why, <i>Dick Bachelder</i> (50 min.)
		A Study on BODs, <i>Jim King</i> (25 min.)	
	Basic Nitrogen Treatment Principles in Wastewater Systems, <i>Dave Lentz</i> (50 min.)	Panel Discussion - NSF Standards - Past, Present and Future, Moderator: <i>Ron Suchecki</i> (50 min.)	Eco-Responsible Solution for Onsite Wastewater Treatment: Comparative Life Cycle Analysis, <i>Marie-Christine Belanger</i> (50 min.)
3:40 pm - 4:00 pm	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers	Live Zoom Session for Q&A with the Speakers

Conference Concludes; Courses available through 12/31/20