FALL
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The Official Publication of the Water Environment Association of Utah

DIGESTED news

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Using Trees and Soils to Prevent Stormwater Runoff

2014 WEAU Mid-Year Conference

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Member Spotlight ■ Safety Corner ■ News & Notes ■ Students and Young Professionals

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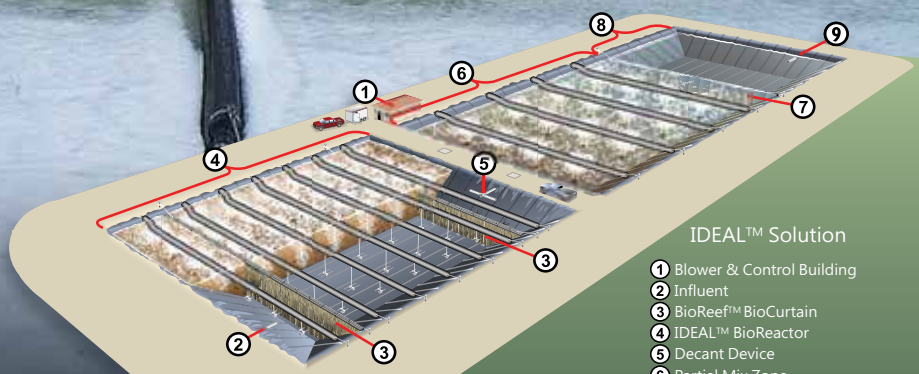

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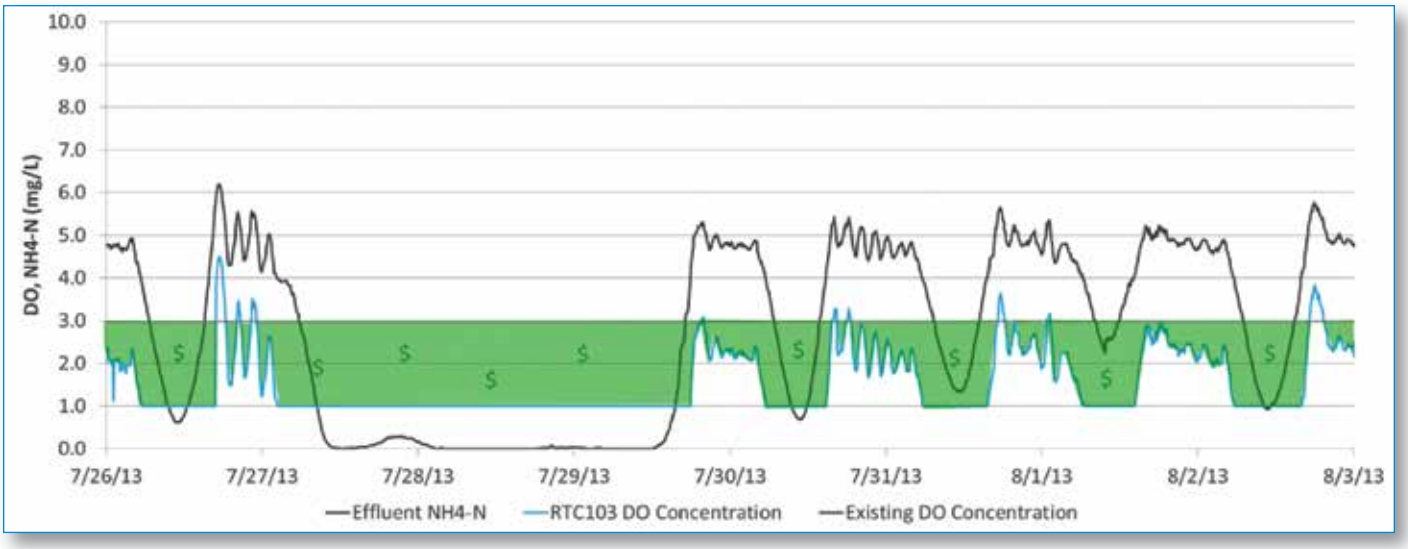

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FEATURES

2014 WEAU Mid-Year Conference 8

Seattle-Area Cities Using Trees and Soils to Prevent Stormwater Runoff 14

Departments

President's Message 6
Editor's Message 7
PWO 12
Member Spotlight 21
Safety Corner 22
News & Notes 25
Students and Young Professionals 33
Advertisers' Index 34

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Unsung heroes


Mike Foerster

Over the last few and continuing over the next few months, WEAU and WEF have had and will continue to have a lot of exciting events. We were able to play together as we spent a fun night at a ball game, learn together as we attended trainings and rooted for our two OPS Challenge Teams as they competed at WEFTEC. In just a few weeks we will have our midyear conference and additional trainings where we will continue to share ideas, grow and learn together. I hope you find these events beneficial and will continue to take advantage of these opportunities.

A recent viral YouTube clip recently brought a tear to my eye. The title of this clip is 'Unsung Hero' portraying a young man who does great deeds but receives little or no recognition for them. (*https://www.youtube.com/watch?v=uaWA2GbcnJU*) It portrays a young Taiwanese man going about his daily life. The first image is of him getting water dumped on his head. A frustrating situation that could have made him bitter, but instead he moves a dying plant under the pouring water to help it grow. As the clip continues, we watch him as he goes about his daily life looking for ways to help. He helps the elderly, gives up his seat on a bus, feeds a dog and helps a child get enough money to go to school. Just like each of us, he could have just walked through life, thinking only about himself, but he chose to look to others and make the world a better place, one small act at a time. As a result of his actions, it appears that those people he influenced and others who observed him also began doing small good deeds, and helping those around them. He truly was an unsung hero.

I believe we each can think of an unsung hero that has affected our lives. Perhaps it is someone from our youth, a teacher, scoutmaster or minister that took the time to show that he cared. Perhaps your first employer that took you under her wing and gave you the break you needed. No matter who it is, I believe each of us has been influenced by someone to be a better person by some small act of kindness.

Each one of us in the wastewater industry are unsung heroes. We come to work, day in and day out and do everything from shovel sludge to design million dollar facilities. Every day we make our homes and neighborhoods better, safer and cleaner places to live. The contributions you make are not going unnoticed. As I watch you work and see what you do, it inspires me to work harder and do more to help others. Thank you, for your contributions and for making our world a better place to live. We all benefit from your hard work. dn

Mike Foerster
President

"As I watch you work and see what you do, it inspires me to work harder and do more to help others. Thank you, for your contributions and for making our world a better place to live. We all benefit from your hard work."

Meeting of the minds

Chad Burrell

June 19, 2014 the WEAU Board and Committee Chairs met to discuss the attack plan for the coming year. This kickoff meeting always serves as an opportunity to welcome in those that are new to their office and get them pointed in the right direction, it serves as a reminder to the rest of us of the real purposes of the WEAU organization, which is to serve the membership and industry that we are a part of that protects human health and the environment. I hope we can all look forward to a great year full of fun trainings and great conferences. Thanks everyone for your willingness to serve. dn

Chad Burrell
DN Editor

2014 WEAU MID-YEAR CONFERENCE

NOVEMBER 18, 2014

8:00 AM - 5:00 PM

Utah Cultural Celebration Center
1355 West 3100 South
West Valley City, Utah

The **Water Environment Association of Utah** is dedicated to the professional growth of its members and the preservation and enhancement of the water environment.

CONTINUING EDUCATION

Are you a certified operator in need of continuing education units? You can earn up to 0.6 CEU by attending the WEAU Mid-Year Conference.

Are you a professional engineer? It is required that you complete a minimum of 24 hours of professional continuing education within a two-year renewal cycle. The time you spend in sessions at the conference counts toward your continuing education requirement.

REGISTRATION

Please complete registration before November 4, 2014 for the best rates. Registraion information is available at www.weau.org. A continental breakfast and lunch are provided as part of the registration.

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2014 WEAU Mid-Year Conference Technical Session Schedule

TIME	SESSION A1	SESSION B1	SESSION C1	SESSION D1
8:00 - 8:30	**Registration and Continental Breakfast**			
Topic	**Management**	**Treatment Technologies**	**Operations**	**Collections**
8:30 - 9:10	**Latest Trends in Employment Liability** (Darrell Child - Olympus Insurance)	**Low Tech/High Value Headworks Screen Testing** (Clint Rogers - Carollo)	**The Role of Pretreatment in Treatment Plant Process and Its Benefit to Operators** (Adam Butterfield - SVSD Jordan Basin WRF)	**Big Truck Safety - Part 1** (Rick Oakes - Utah Highway Patrol)
9:20 - 10:00	**Social Media and its Potential Uses** (Ayman Alafifa - USU)	**Effective Removal of Emerging Contaminants: Ozone vs. UV** (Jessica Hart – BlueInGreen)	**Pumps, Now That it's Here, How Does it Get Where it's going?** (Jeff Ebert, Provo City WWTP)	**Big Truck Safety - Part 2** (Rick Oakes - Utah Highway Patrol)
10:00 - 10:20	**BREAK**			
Topic	**Energy Resources**	**Treatment Technologies**	**Operations**	**Collections**
10:20 - 11:00	**Identification of Energy Efficiency and Recovery Opportunities within Municipal WWTP Operations** (Sarah Guzman – Utah State University)	**Case Study of Cloth Media Filtration Technologies to Achieve Ultra Low Phosphorus Levels ≤ 0.1 mg/L** (Thomas Sichz - Aqua Aerobics Systems)	**Dual Processes, the Challenges of Operation and the Balancing Act We Play** (Jeff Kirkman - Central Weber WWTP)	**Best Practices in Fleet Safety** (Brian Child - Olympus Insurance)
11:10 - 11:50	**FOG Receiving Station Energy Recovery** (Jeff McCormick - Carollo)	**Start the Presses! Screw Press vs. Rotary Press Testing at SBWRD** (Jacob Baer - Carollo)	**Membranes - An Alternative to Secondary Clarification and What Makes Them Tick** (Jason Callaway - Santaquin City WWTP)	**Cost Effective Root Control** (Justin Fearn - Vapor Rooter)
12:00 - 1:20	**LUNCH AND KEYNOTE SPEAKER**			
TIME	**SESSION A2**	**SESSION B2**	**SESSION C2**	**SESSION D2**
Topic	**Nutrient Removal**	**Water Quality**	**Operations**	**Collections**
1:30 - 2:10	**Site Specific Total Ammonia-Nitrogen Criteria Proposed by USEPA: New Developments and Implications** (Ananda Bhattacharjee - U of U)	**Use and Misuse of Bioassessment Methods to Monitor Water Quality - Mill Creek Case Study** (David Richards - OreoHelix Consulting)	**The Laboratory, What Role Does it Play in the Operation of a WWTP?** (Sherry Sheffield - South Valley Water Reclamation)	**Using Acoustic Inspection to Prioritize Sewer Cleaning** (Alex Churchill - Infosense)
2:20 - 3:00	**What Are Our Options to Manage Nutrients in Existing WWTPs?** (Sachiyo Tanaka - U of U)	**Nutrient Criteria for Utah's Category 1 Waters - Development Strategy** (Erica Gaddis, Ph.D. - DEQ)	**Chemical Nutrient Removal** (Marlo Davis - Snyderville Basin Water Reclamation)	**How to Perform a Self-Safety Audit** (Jason Wattersen - ULGT)
3:00 - 3:20	**BREAK**			
Topic	**Nutrient Removal**	**Water Quality**	**Operations**	**Collections**
3:20 - 4:00	**Process Improvement Strategies for Nitrogen Removal** (Jeff McCormick - Carollo)	**Next Step of DMR** (Matt Garn - DEQ)	**Solids Handling - An Alternative to Belt Presses. Set it and Forget it Magna Water's Screw Presses** (Tony Petersen - Magna Water)	**Working Smarter with Your Smart Phone** (Matt Stayner - Bowen Collins & Assoc.)
4:10 - 4:50	**Nutrient Control Optimization** (Henryk Melcer - Brown and Caldwell)	**Surviving the Red Tape Part II - Funding Projects with Utah's Clean Water SRF Program and Clean Water Act Amendments** (Johnathon Cook, P.E. - DEQ)	**Math - How to Make Complex Problems Easy** (Gordon Evans - SVSD Jordan Basin WRF)	**Utilizing Oxygen in Collection System Odor Control** (Joshua Crittenden - BlueInGreen)

The content of the technical program is subject to change. Check www.weau.org for updates.

2015 CALL FOR ABSTRACTS

WEAU
ANNUAL CONFERENCE & EXPOSITION
April 29 - May 1, 2015
Dixie Center, St. George, Utah

The Water Environment Association of Utah request abstracts of technical presentations for their annual conference in St. George, Utah related to the following topic categories:

Asset Management	Public Involvement/Outreach
Collections Systems Operations, Assessment, Maintenance and Rehabilitation	Residuals and Biosolids Management
Collections Systems Planning, Modeling, and Design	Safety and Security Issues
Energy Management	Stormwater Quality
Financing/Rate Studies	Sustainability, GHG Emissions, Biofuels
Industrial Pretreatment Program Issues	Utility Management Issues
Industrial Wastewater Treatment	Wastewater Facility Operations
Innovative Treatment Equipment and Technology	Wastewater Facility Planning, Modeling, and Design
Instrumentation/Process Control	Water Reclamation and Reuse
Nutrient Removal	Miscellaneous Wastewater Related Topics (Odor, Micro-Pollutants, etc.)
Project Delivery Methods	

Abstracts will be accepted **only through online submission** at www.weau.org

Online entry will require:

- Name and contact information
- Topic and abstract (not to exceed 150 words)
- Brief bio to assist the moderator with introductions (in the case of abstracts that are accepted)

Submission Deadline:
January 23, 2015

Contact David Hatch at dhatch@BrwnCald.com with any questions.

WEAU is a member association comprised of water quality professionals working to preserve and enhance water quality. WEAU encourages anyone associated with work in water quality to submit an abstract for the annual conference. The annual conference is expected to have over 300 attendees and provides an opportunity to present important findings in the field of water quality to industry leaders and peers.

A separate Operator's Forum session will be included in the program. We encourage operators to see this as an opportunity to give others insight into operations issues and to share valuable experience with other operators. WEAU also encourages involvement from universities including abstract submittals from faculty or students working in the field of water quality.

Depending on the number of abstracts received, one or more equipment vendor sessions are planned to provide a forum for equipment vendors to present on new and innovative wastewater related equipment and processes. Participating vendors must purchase an Exhibition booth to qualify for a Vendor's Information Session Presentation. Please see the conference website (www.weau.org) for Exhibit Booth information.

Abstracts should be brief (max. of 150 words) yet fully define the presentation. Abstracts must be submitted online through weau.org. WEAU does not require the submittal of a formal, written paper to make a presentation. However, an electronic copy of the final presentation is required to be available for upload to the WEAU website.

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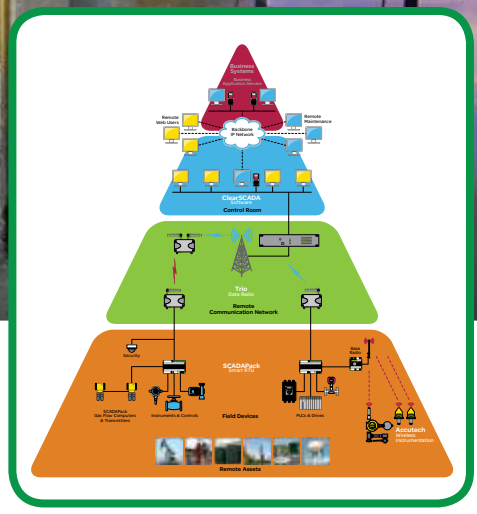

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Operators Challenge Update

By John Marteliz

As our two Operators Challenge teams get ready for New Orleans, they have had to face some unique challenges so far this year. The Wasatch Allstars have had to overcome an injury to one of their teammates. This happened towards the end of August, which left them little time to adapt their routines. Nevertheless, they have done a fantastic job overcoming this obstacle and I feel they will still be very competitive at WEFTEC. We all wish the injured teammate a speedy recovery.

North Davis also had a unique situation happen to them. One of their teammates was unable to compete this year at WEFTEC because of the time of year the competition will be held. The replacement they found for him is Brian Lamar. Brian brings with him a ton of experience.

Even though both teams have faced these setbacks, their commitment and drive to do the best that they can has been outstanding. It is a reflection of who they are as individuals. They see a bump in the road and overcome it by coming together as a team. I know both teams will have great success at WEFTEC. When the teams are able to practice together, they really encourage each other and give pointers to help them get faster. It's great to see the friendships and camaraderie they are building. The North Davis Royal Flush team members are Tyler Barfuss, Brian Lamar, Tom Andersen, Captain Gordon Call, and Coach Mark Mudrow. The Wasatch Allstars team members are Trace Workman (Central Davis), Coach James McGill (Central Valley), Captain Dan Watts (Cottonwood Improvement) Brian Thatcher (Jordan Basin), and Delaun Fullmer (South Valley Water). Thanks again guys for your hard work. I would also like to thank the Districts, WEAU Board, and our fellow coworkers for your continued support with our Ops Challenge teams. DN

> "They see a bump in the road and overcome it by coming together as a team. I know both teams will have great success at WEFTEC."

2014 Annual Operator Challenge Kickoff

DATE: December 3, 2014
TIME: 11:00 am
PLACE: Central Valley Maintenance Garage (Practice Building)

All entities interested in having a team or individual, participate in the Operator Challenge in St. George should have a representative at this meeting. Practice Schedules will be discussed.

RSVP to Tim Madsen at 801-580-4277 or email *tdmadsen@gmail.com* or contact with any questions. DN

Seattle-Area Cities

Using Trees and Soils to Prevent Stormwater Runoff

By Graham Ray, DeepRoot Green Infrastructure CEO

Cities across the country are seeking new strategies to address environmental goals for their communities. Many are focusing on increasing their tree canopy cover and encouraging healthy, mature tree growth (while minimizing heaving from roots), while also managing the steady rainfall they receive onsite – thereby avoiding adjacent waterways. That's why officials, engineers, and developers are exploring low impact solutions like trees and soils that help them achieve these design goals while still allowing for urban necessities like parking lots and sidewalks.

For hundreds of years, trees and soil in rural areas have managed stormwater volume and improved water quality through storage (the amount of water retained in the soil), interception (the amount of water intercepted by trees before it hits the ground) and evapotranspiration (the combination of water evaporating from the soil and transpiration from the plants growing in the soil). The traditional engineering approach of treating stormwater, however, sees it as a waste product to be piped off the site as quickly as possible. Recently, though, this trend is changing. Professionals recognize that stormwater is a resource that can be harvested and used right where it lands. The benefits of trees are particularly evident in urban settings, where they face the most difficult growing conditions, and where impervious surfaces often make flooding, pollution and overflow of storm drains a big risk even during small rainfall events.

Rain gardens can be a great solution for this, but require large open spaces and frequent maintenance – both of which are major challenges in heavily developed areas. But urban areas don't have to be left out of this approach to using stormwater as a resource. Underground bioretention systems that provide soil to trees without the need for open planters are making green infrastructure solutions possible even in very developed areas. The Silva Cell, a modular suspended pavement system, is essentially a soil-delivery system that creates a rooting area for trees underneath paved areas like sidewalks and parking lots. This allows urban communities to use green infrastructure in areas that

previously would not have been feasible. It has already been used in over a dozen projects throughout the state, including on Winslow Way in Bainbridge Island and along Aurora Avenue in Shoreline.

What's a Silva Cell?

The Silva Cell is a modular, underground system that utilizes the proven capacity of soils for stormwater management and healthy tree growth to bring green infrastructure to the built environment. The large quantities of healthy soil housed within the Silva Cell serve two important functions: growing large trees and treating rainwater onsite. It does this while meeting engineering requirements and AASHTO H-20 loading standards.

Silva Cells are installed by trained professionals, usually a landscape or general contractor. Each Silva Cell is composed of a frame and a deck. Frames can be stacked one-, two-, or three-units high and topped with a deck to create the desired depth and accommodate any size planting area. The Cells can be spread laterally as wide as necessary. The Silva Cell is approximately 92% void space and holds 10 ft^3 (.28 m^3) of soil, enabling it to easily accommodate surrounding utilities.

Where are underground soil systems being used in Washington?

Aurora Avenue (Shoreline, WA)

Implementing a system for on-site stormwater management was an important goal for the Aurora Shoreline, a three-mile long transit/stormwater management project along Route 99 near Seattle, WA. The site had a traditional stormwater system that was built in the 1960s, and a better form of infrastructure was required to improve traffic conditions, stormwater runoff, and water pollution (such as phosphorus) flowing into Lake Washington.

Aurora Avenue Project (Shoreline, WA)
Overhead view of Silva Cells being installed. *Photo courtesy of Otak.*

Otak Landscape Architecture was the designer for the project, and Senior Associate Curtis LaPierre designed a streetscape with a rain garden along one side separating the pedestrian area from the roadway. In order to meet their stormwater goals, LaPierre created a system that integrated permeable pavers, curb cuts, and Silva Cells for 40 trees. The Cells, which essentially extend the rain garden underneath the paving, contain the soil volume that nurtures the trees and also slows and treats the water before it is piped out of the system. The stormwater from the road enters the rain gardens through curb cuts and is absorbed into the soil where it is soaked up by the trees and plants and recharges the groundwater. Rain that falls directly on permeable pavers, in the rain garden itself, or that spills from adjacent sidewalks and parking lots undergoes the same process.

"The design intent was simple," said LaPierre. "We wanted to install large canopy trees that would thrive for many years. The benefits of large canopy trees we were looking for included reducing the urban heat island effect, provided rainwater interception, and aesthetically; growing trees that will be in scale with the widened roadway. Given the tree-growing constraints of a narrow planting strip, numerous underground utilities and highly compacted paving subgrade, we looked at Silva Cells as a way to gain additional tree root space under the sidewalks. Because the Shoreline City Council wanted the project to include the

Winslow Way Project (Bainbridge Island, WA)
Left: Silva Cell area is excavated and the first layer of Cells go in. Right: Silva Cell area is excavated and the first layer of Cells go in.
Photos courtesy of DeepRoot Green Infrastructure, LLC.

latest in green stormwater infrastructure practices, we also designed stormwater planters adjacent to Siva Cell zones to accept roadway runoff for stormwater quality and partial infiltration. We also added an additional benefit by employing pervious concrete paving units in sidewalks above the Silva Cells to capture additional runoff and serve as a means of easily identifying which sections of the sidewalks are supported by Silva Cells."

The project planners, who were working within a limited right-of-way and large paved areas with weak runoff control, faced major challenges. The overall plan called for additional traffic lanes, wider sidewalks, and up-to-date stormwater controls – all with strict sustainability requirements. The Silva Cell enabled them to help satisfy some of these needs without affecting how pedestrians or cars use the site. In addition to all this, the system meets their environmental goals by helping to slow the rate of runoff, reduce the total volume, and remove contaminants and heavy metals before they run directly into Lake Washington. This project utilized around 800 Silva Cells in a one-layer system, adding 8,000 cubic feet of soil volume for the trees and 1,600 cubic feet of space to store and treat stormwater.

Winslow Way (Bainbridge Island, WA)

Winslow Way is the spine of downtown and the cultural and commercial center of the Bainbridge Island community. Several years ago, as the city was considering necessary utility upgrades to water distribution, sanitary sewer, and storm sewer system, they saw an opportunity to use green infrastructure to improve the quality of the water in adjacent Eagle Harbor and express their community values through urban design.

Seattle-based SvR Design Company knew that the city wanted to create a robust, colorful downtown corridor that accommodated multimodal activity while integrating and protecting the natural environment. Changes included wider sidewalks, public gathering areas, and bike facilities. They also used green infrastructure design solutions by adding stormwater planters, rain gardens, and Silva Cells to capture stormwater on-site and provide a rooting environment for seven street trees. According to Nathan Polanski, civil engineer with SvR Design Company, "Silva Cells were selected to facilitate healthy mature street trees and help achieve project goals for large tree canopies in the downtown core. Silva Cells allowed the project team to locate street trees in the parking lane, reducing the visual width of the street, and limiting impacts to on-street parking supply.

Installed with pervious concrete the Silva Cell systems also helped the project meet city goals for stormwater management and complemented other green stormwater systems that were designed including stormwater planters and rain gardens."

Because the Silva Cells go underneath paving, SvR could locate the trees in the angle parking zone and realize a design to help calm traffic. Pervious concrete above the system provides an easy entry point for stormwater to enter and pass through the system into a bioretention soil that cleans the water while also nourishing the tree. Over 800 cubic feet of soil per tree means that the trees should be able to grow into healthy, mature, long-living specimens to frame this important corridor. An underdrain below the Silva Cells connects to the public storm drain to convey any runoff that passes through the system to counteract poorly draining native soils and prevent stormwater from migrating into the basements of adjacent buildings. In 2013, this project received an Award of Excellence for Best City Project by the Washington Department of Transportation (WSDOT) and has been called "one of the best remade streets I've seen anywhere in America" by Dan Burden of the Walkable and Livable Communities Institute.

Winslow Way Project (Bainbridge Island, WA)
The system is topped with decks, over which aggregate and pavers were laid.
Photo courtesy of DeepRoot Green Infrastructure, LLC.

What is the underground system installation process like?

The Winslow Way (Bainbridge Island) project, was a full street reconstruction, so traffic control was not really different for the Silva Cells than the other utility infrastructure being installed. The contractor closed one half of the street until all improvements were complete and paving done and then switched to the other side. Utility services were routed through the Silva Cell system to adjacent storefronts.

A nearby city-owned property was used for staging in addition to portions of the street that were closed. The design included a geosynthetic clay liner to prevent infiltration (there were concerns about runoff entering adjacent basements).

Both Silva Cell projects capture water using pervious paving that allows water to pass directly from where it falls into the soil contained below. This method of capture ensures that water can reach every part of the soil column, not just the root ball at the tree opening.

Together, the Shoreline and Bainbridge Island projects used a total of 1,350 Silva Cells frames, providing 13,500 cubic feet of soil to 47 trees, plus what is provided in the generously sized tree openings. Due to benefits of soil sharing, trees that are in the same planters have access to an estimated additional 50 percent of soil each.

Will trees be beneficial to my urban community?

The Silva Cell has been used in dozens of communities across Washington. In addition to the two projects mentioned here, it has also been installed in Tacoma, Seattle, Kirkland, Bothell, Pullman, Spokane, and Bellevue. While some of these projects are using the Silva Cell to provide soil only (rather than to also manage stormwater), many do both.

Winslow Way Project (Bainbridge Island, WA)
Left: Silva Cells are filled with soil for tree roots and on-site bioretention. Right: Silva Cells are filled with soil for tree roots and on-site bioretention.
Photos courtesy of DeepRoot Green Infrastructure, LLC.

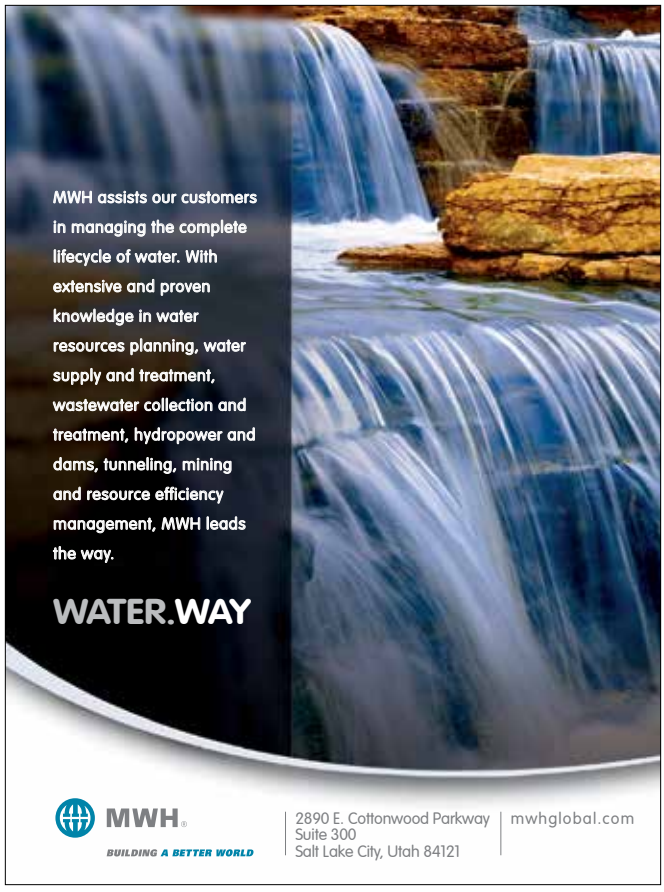
These sites demonstrate that trees and soils are an effective and important green infrastructure solution for daily rainfall events of up to around 1" (2.5 cm), the first flush that contain the majority of pollutants.

Not only are trees and soils a sustainable method for capturing stormwater, they can also help save money for municipalities. If properly designed, installed, and maintained, trees actually have the capacity to manage stormwater on-site and require no more open space than standard street trees in sidewalks. While the initial investment may seem high compared to planting trees in a standard sidewalk cutout, a lifecycle cost analysis shows that the trees will pay back their investment within about 20 years – as well as providing savings on avoided "grey" infrastructure upgrades. The trees can also add significant added capacity to a stormwater system. At day one the system meets the regulatory requirements, as the soil is doing all of the peak flow reduction and water quality improvements. Over time, as the trees mature and grow, their capacity to intercept rainfall and evapotranspire water from the soil column makes the entire system more efficient and adds significant capacity over time.

Trees will also contribute other benefits to urban communities, such as providing cleaner air, increasing property values, reducing incidents of asthma, and even reducing crime. It's no wonder that trees are increasingly being seen as the stormwater solution of the future for urban communities.

The integration of green utilities like soil, trees and water into urban areas dramatically enhances their design sustainability and helps alleviate some of our most pressing ecological challenges, including poor air quality, rising temperatures, and flooding and pollution from daily rainfall events. DN

Graham Ray is the CEO of DeepRoot Green Infrastructure, LLC, based in San Francisco.

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Spotlight on Anthony Daw

By Tiffini Adams

Anthony Daw grew up in Las Cruces, New Mexico, where he attended high school and New Mexico State College, spending his summers visiting his grandparents in Salt Lake City. He served his mission over seas in the France Paris Mission and then came back and headed north of the border to the Canada Halifax Mission.

After his mission he moved to Salt Lake City to study Chemistry at the University of Utah. This was also where he met his beautiful bride, Annette. They attended the singles ward but really bonded at the dinner theater where they both performed. Anthony was playing Sancho Panza in Man of La Mancha and Annette was an understudy. They fell in love singing songs together backstage. They soon married and along came their daughter, Katie, followed by their son, Bruce.

Anthony started his career as a Chemist for Ford Chemical where he had the opportunity to gain experience in most areas of the lab over the five years that he worked there. He then was hired at Central Valley Water Reclamation Facility as a Chemist in the Chromatography and Gas Chromatography department. He ran the Whole Effluent Toxicity area of the lab as well. He was promoted to Laboratory Director within a couple of years and has held that post for nearly 25 years.

As Laboratory Director Anthony loves to take on special projects. He has been working on a Digester Study to discover what waste streams will produce optimal methane production for Central Valley's digester and CoGen operation. He has also been overseeing part of the Jordan River Characterization study in cooperation with the Utah Division of Water Quality. Anthony is a teacher at heart. You will find him most mornings teaching the Introductory Chemistry course at the Salt Lake Community College.

Anthony's love of science came from his father who was a natural born Physicist. Dr. Harold Daw was one of the developers of the air table (now used for air hockey) among many other inventions. He compiled an amazing Physics Demonstration over his lifetime that he shared with many friends and colleagues. Anthony honored his late father this past spring by offering a Physics Night to celebrate his father's amazing collection. His father always said "If it bites and stings, it's Biology. If it smokes and smells, it's Chemistry. And if it doesn't work, It's Physics!"

When Anthony is not at work, he loves to play strategic board games. Every few years, he treats himself to a week of gaming in Lancaster, PA, for the WBC: World Boardgaming Championship. If you have an open evening at a conference, or even here at home, Anthony would gladly join you to play *Puerto Rico*, *Power Grid*, or *Aquire*, just to name a few.

And finally, Anthony's other great passion is for his new grandbaby, Gilly. He cannot wait to share with him the many wonders of Chemistry, Physics, and certainly board games! dn

> "If it bites and stings, it's Biology. If it smokes and smells, it's Chemistry. And if it doesn't work, It's Physics!"

The Modern (Safe) Wastewater Worker

By Curt Simmons, North Davis Sewer District and the WEAU Safety Committee

"Do your part by going the extra mile; watch out for yourself and your fellow employee, work safe because it is the right thing to do.... your life, your health, your family, and friends all depend on you."

According to the Bureau of Labor Statistics the Utah State injury rate for industrial accidents is down. We believe this is due to a well-educated employee who is risk aware and not willing to take chances on the job. Like most industries, we have a history of unsafe work practices, but because of the progressive nature of the wastewater business this old-school (un-safe) work attitude is mostly behind us.

The modern wastewater employee is trained to use personal protective equipment (PPE) before he/she starts a job. Employees spend time evaluating the risks and hazards of a work-related procedure and because of this process are less likely to take a short cut which could lead to an injury. Being human, we still make mistakes, but overall we excel at our profession. The attitude of the modern wastewater worker has changed immensely since the inception of our formal safety programs. Our accident rate is decreasing and will soon be as low as less dangerous occupations in the U.S.A. Comprehensive safety programs have helped our injury statistics, but the focus on changing our safety culture is primarily responsible for this result.

I am proud to be part of the wastewater industry and the people that make it all work. I extend my appreciation to all wastewater and water treatment employees for their dedicated service. We are responsible for operating and maintaining wastewater and water treatment plants, collection and distribution systems and laboratory analyses. Many plants are responsible for the safe handling and management of hazardous materials, including chlorine. This is a formidable challenge, but we do it every day - 365 days a year, in a safe and professional manner.

In the future we can expect zero accident tolerance. Occasional accidents may be unavoidable, but with a changing safety culture we can expect our accident frequency to decrease.

Do your part by going the extra mile; watch out for yourself and your fellow employee, work safe because it is the right thing to do.... your life, your health, your family, and friends all depend on you. DN

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Water Environment Association of Utah
General Association Awards
Nominations Due Tuesday, December 30, 2014.
Forms available online at www.weau.org or from Daniel Griffin
For more information contact
Dan at 801-536-4387
Or by email dgriffin@utah.gov
Fax all completed forms to 801-536-4301
Nominate!!!!!
Awards committee volunteer announcement coming soon!!!!!

Water Environment Association of Utah

General Association Awards

2014 NOMINATION FORM

Instructions: Place a "X" mark in the box next to the award for the nomination. Next, fill out the information for the nominee and yourself (nominator) as fully as you can, this information will be used by the selection committee to process the nomination. Please send a separate application for each nomination, ***OK to copy form if needed for this purpose.*** Next, FAX application to: (801) 536-4301, ***no cover necessary***, e-mail to: ***dgriffin@utah.gov***, or mail to: Division of Water Quality (attention Dan Griffin) PO Box 144870, Salt Lake City, Utah 84114-4870. Applications are due by December 30, 2014.

WEAU is a member organization where members can nominate those individuals or organizations within our industry that deserve recognition by the association for their efforts. When you send in your nomination, you will be contacted to arrange a time for a visit by the awards committee. Individual awards must be nominated by someone other than nominee. If nominating an individual, please notify their supervisor and have them sign the form. Members with significant managerial responsibilities, (i.e., general managers, etc.) are ineligible. Those with significant supervisory responsibilities, (i.e., coordinators, directors, etc.) should be considered for the supervisor award, or program award. If you have any questions, please feel free to contact Dan Griffin at (801)536-4387. Good Luck.

Plant under 5 MGD	Plant over 5 MGD	Laboratory
Discharging Lagoon	Non-Discharging Lagoon	Laboratory Technician
Operator under 5 MGD	Operator over 5 MGD	Safety
Collection System under 5 MGD	Collection System over 5 MGD	Maintenance Specialist
Collection Operator under 5 MGD	Collection Operator over 5 MGD	Supervisor
Pretreatment Program	Pretreatment Specialist	Biosolids Program
Young Professional		

2014 NOMINEE INFORMATION:

Name: _____ (As it will appear on the Plaque)

Facility Name: _____

Facility Manager: _____

Address: _____

City/State/Zip: _____/_____/_____

Phone: _____ FAX: _____

Supervisor's signature: _____

NOMINATOR INFORMATION:

Name: _____

Address: _____

City/State/Zip: _____/_____/_____

Phone: _____ FAX: _____

Briefly describe why you think the nominee should be considered for an award:

_____

_____

_____

FAX FORM TO:
(801) 536-4301
or
E-mail FORM TO:
dgriffin@utah.gov
or
Mail FORM TO:
Division of Water Quality
Attn: Dan Griffin
PO Box 144870
Salt Lake City, UT 84114-4870
By Dec. 30, 2014

Pretreatment Update

By Sarah Leavitt

The Pretreatment Committee has two trainings coming up. The next training will be held on November 6, 2014. We are hoping to have the Health Departments from around the State meet with us to discuss inspections at food establishments.

The Spring Training will be held March 12, 2015 at the ULGT. It will touch on the following topics; Pretreatment Ordinance and Local Limit submittal requirements to the State, POTW records, How to Obtain a Search Warrant, Inspections, SIU Records, Sampling, Self-Monitoring Reports and a POTW Forum without the State.

Please mark your calendars for these trainings. We hope you can come.

There have been many changes in the Pretreatment Group, Clif Swain from Provo City moved to a different occupation. Other Pretreatment Personnel have moved to other entities and positions, we wish them well and

good luck in their new adventures. Troy Houghton from Orem City has been away from work since May with a medical condition. The doctors say he has Sleep Apnea, Narcolepsy and Cataplexy but he is working hard to get back to normal. He has seizures at least every day and cannot be left alone. He wanted everyone to know how much he has enjoyed working and getting to know you. He also appreciates your support and will miss everyone.

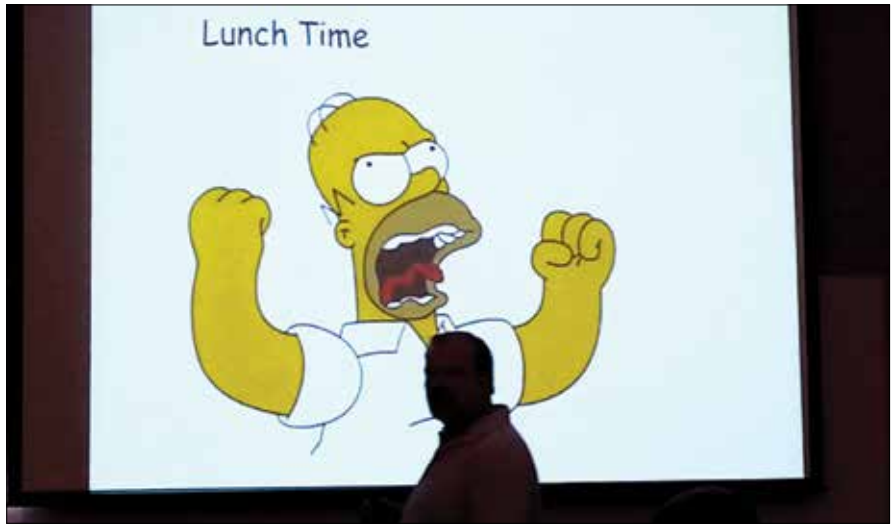
If you would like to become involved in the Pretreatment Committee or would like further information on the upcoming Pretreatment trainings; please contact Sarah Leavitt at (801) 404-6476, *sarahleavitt.paysoncity@gmail.com* or *weaupretreatment@gmail.com.* DN

Nutrient removal training

By Chad Burrell

Several trees graciously gave their life last month for Paul Krauth to print out his handouts for his two day nutrient removal seminar. But if anyone is like me these handouts will serve as reference and further study material as we all get closer to nutrient removal requirements coming down the line. This seminar was very well attended by operators, managers, and state personnel from St. George to Logan. As always, nutrient removal and calorie uptake go hand in hand, so needless to say we ate well! I send out thanks to the PWO personnel that put this training together as well as to Paul for his great instruction.

> "I send out thanks to the PWO personnel that put this training together as well as to Paul for his great instruction."



Training from a pro

By John Marteliz

If you have never had the opportunity to attend a training seminar by Paul Krauth, you are really missing out. Paul Krauth and his presentation on Nutrient Removal 101 has lived up to everyone's expectations. The food at Paul's seminars is always top notch and so are his presentations. We had an impressive turnout with 54 attendees for the two-day course. I was equally impressed with Paul and how he can teach for two days straight. I have respect for anyone who can stand in front of a room full of people and talk for hours and hours.

Paul does an outstanding job in his preparation for his training events. He understands his audience and communicates in a way that someone as simple minded as me can follow what he is trying to teach. The pictures and illustrations he includes in his presentations do not hurt either. Needless to say, he keeps the material interesting. The seminar was very helpful for treatment plant operators and managers who need to be aware of the new regulations that are coming out in the near future. Hopefully as those regulations go into effect, we will all be doing those things Paul touched on to meet the new criteria. Paul and the PWO Committee are planning on some operators training for this November's State certification exam. We will post that information as soon as a date is scheduled. I hope to see you all there. DN

> "Paul does an outstanding job in his preparation for his training events. He understands his audience and communicates in a way that someone as simple minded as me can follow what he is trying to teach."

Nutrient Removal Questions

By Gordon Evans

1. T/F Nutrients are chemical elements or compounds needed by organisms to survive, grow and reproduce_____.

2. T/F Nitrogen comes in two forms, Un-oxidized and Oxidized. Of these two forms, Nitrogen Gas in a secondary clarifier will not cause operational problems_____.

3. T/F Ammonification is the conversion of organic nitrogen to ammonia-nitrogen resulting from the biological decomposition of dead plant and animal tissue and animal fecal matter_____.

4. The conversion of organic nitrogen to ammonia nitrogen by enzymes secreted by bacteria, plants and animals in a reaction that adds water is called? _____.
   A. Hydrocephalus. B. Hydrophobia. C. Hydrolysis. D. Hydrophilic.

5. The Oxic SRT is a calculation of? _____ .
   A. Biomass in the system (lbs.) ÷ Biomass leaving the system (lbs.)
   B. Biomass under aeration (lbs.) ÷ Biomass wasted (lbs.)
   C. Biomass under aeration (lbs.) ÷ Biomass wasted (lbs.) + Biomass lost in effluent (lbs.)
   D. Biomass in the system (lbs.) ÷ Biomass wasted (lbs.) + Biomass in the effluent (lbs.)

6. Since Dissolved Oxygen will affect De-nitrification the DO. Should be kept below? _____.
   A. Below 0.3 mg/L in the anoxic zone. B. Above 0.3 mg/L in the anoxic zone.
   C. Above 3.0 mg/L in the aerobic zone. D. Below 3.0 mg/L in the aerobic zone.

7. Hypoxic conditions in a waterway caused by phosphorous are? _____
   A. Low DO during the day and high DO during the night.
   B. Low DO during the day and low Do during the night.
   C. High DO during the day and low DO during the night.
   D. High DO during the day and high DO during the night.

8. In the Biological phosphorous removal the phosphorous accumulating organisms (PAOs) will exchange phosphorous for volatile fatty acids (VFAs) under what conditions? _____
   A. Anaerobic. B. Anoxic. C. Aerobic. D. All of the above.

9. Since phosphorous can only be removed from the waste stream as a solid it must be converted or attached to something before it can be removed. These processes are? _____
   A. Biological. B. Biochemical. C. Chemical. D. Both A and C.

10. In the activated sludge process, it will take approximately 100 lbs. of BOD to reduce 5 lbs. of nitrogen and 1 lb. of phosphorous. If your facility has in influent Q of 7.63 MGD. And an influent BOD of 178 mg/L. Do you have enough incoming BOD to do nutrient removal if you are receiving 1.7 mg/L nitrogen. And 0.55 mg/L phosphorous? _____
    If so, which one will you remove effectively? _____

Collection Quiz
Getting back to basics

By WEAU Collection Committee

1. The higher the degree of angle the nozzle jets are set, the better the nozzle will?
   A. Climb
   B. Clean pipe walls better
   C. Apply degreasing chemicals
   D. Run root cutter heads

2. Colors on the inside of the high pressure cleaning hose need to match?
   A. The outside color
   B. The nozzle size
   C. The type of pump being used
   D. The hose fittings

3. A tier 3 nozzle denotes what about the nozzle?
   A. It's the lowest level of nozzle
   B. Is the highest level of nozzle
   C. Can be used with a 3 fined skid
   D. It has three main jets

4. A cleaning hose that has a cut or is worn to the cords should be?
   A. Replaced
   B. Kept in service as long as it is not bulging
   C. Wrapped with duck tape
   D. Cut out and the hose spliced

5. When back flushing the operator should consider?
   A. Location of each lateral
   B. Type of pipe
   C. Flooding
   D. Hose size

6. If while cleaning a line the operator notices fresh gravel coming back with the nozzle what is this an indication of?
   A. The contractor laying the pipe was not careful with the bedding material
   B. The pipe is deteriorating
   C. There is a missing manhole lid
   D. The engineer made a mistake

7. What should be done before leaving the truck parking area?
   A. Discuss where to meet for break
   B. Take time to walk around
   C. Go over work records
   D. Check root saw components

8. The average life span of a drilled nozzle is?
   A. Months
   B. Weeks
   C. Years
   D. Dang near forever

9. When filling from a hydrant one of the major concerns is to?
   A. Let the fire dept. know
   B. Use ridged wall pipe
   C. Open the hydrant all the way
   D. Reset the meter to zero

10. The best way to clean a line that is really dirty with rock and grit is to?
    A. Just go out to the upstream manhole
    B. Step it
    C. Get as much velocity as you can
    D. Wait to vacuum until the invert is full

11. Why must you always know where a cleaning tool is in pipe?
    A. So you know where obstructions or difficulties are encountered.
    B. So the tool can find its way back
    C. So you can locate it when resuming work after a disruption
    D. Because it will void the warranty

12. Emergency stoppages may NOT be cleared safely using?
    A. Hand rods
    B. High velocity cleaners
    C. Power rodder
    D. Flushing

13. Schedule 40 refers to?
    A. Flow capacity
    B. Friction loss
    C. Wall thickness
    D. Tubing strength

14. The best place to send your Collection people for Certification training is?
    A. Salt Lake Community College
    B. U of U Engineering Dept.
    C. Home School
    D. The Collection College

Answers:

Getting back to basics:
1-A, 2-D, 3-B, 4-D, 5-C, 6-A, 7-B, 8-A, 9-C, 10-B, 11-A, 12-D, 13-C, 14-D (Classes have started but you can join anytime.)

Nutrient Removal Questions:
1-T, 2-F, 3-T, 4-C, 5-C, 6-A, 7-C, 8-A, 9- D, 10-7.63MGD X 178 mg/L X 8.34 lbs./gal. = 11327 lbs., 11327 lbs. ÷ 100 = 113 lbs. of ammonia that can be reduced., 113 lbs. ÷ 5 = 23 lbs. of phosphorous that can be reduced., Nitrogen = 7.63 MGD X 1.7 mg/L X 8.34 lbs./gal. = 108 lbs., Yes., Phosphorous = 7.63 MGD X 0.55 mg/L X 8.34 lbs./gal. =34.9 lbs., No.

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Today's forest industry is working hard to become one of the greenest industries on earth.

- What other industry plants hundreds of millions of trees every year?
- What other industry actually grows more of its main resource than it consumes?
- What other industry generates most of its own energy needs from renewable resources, including waste biomass, biogas, hydro and wind?
- What other industry uses a renewable resource and recycled stock as its main ingredients?
- What other industry has worked harder on improving its environmental performance with partners and advocates including governments, customers and environmental groups?

Paper is an essential part of human civilization. While we all use and depend upon electronic communications, it is easy to ignore that it comes at an environmental cost. Worldwide spam email traffic creates greenhouse gases equivalent to burning two billion gallons of gasoline yearly, with numbers rising. More than 200 million items of toxic e-waste are thrown away every year in the US alone, with a recycling rate of only 18% compared to 57% for paper. Estimates are that North Americans throw out more than 500,000 toxic computers and cell phones every day.

No industry is perfect. But the paper industry has made, and continues to make, huge investments in environmental responsibility. Specifying and buying paper from certified sources ensures the continuation and growth of carbon-absorbing forests. Using paper with appropriate amounts of recycled fibre helps preserve forests, conserve energy, and maximize fibre usage through paper lifecycles.

Paper is a powerful communications medium.
Use it responsibly… and recycle the paper that you use.

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Family fun night at Salt Lake Bees

By Bryan Mansell, P.E.

WEAU celebrated a Family Fun Night at the Salt Lake Bees baseball game on Friday July 18. This has become an annual tradition. 118 WEAU members and their families attended and a great time was had by all. For just $10 each, WEAU members were treated to a baseball game, a buffet-style dinner above the third base line, and a raffle for $1,000 in prizes during the 7th inning stretch. Thank you to the Young Professionals Committee for organizing this wonderful event!

Make sure not to miss out on any future WEAU events, and sign up for the email list by sending an email to *membership@weau.org*. Also, the WEAU Young Professionals and Students Group (YPS) has an email list. Please sign up using the form at: *http://www.weau.org/who-we-are/young-professionals.*

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