MEMBER MEETING

December 12, 2019



HOST WELCOME



Marc Roehl Evoqua





Welcome!

TRANSFORMING WATER. ENRICHING LIFE.®

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Evoqua's Solutions for Water Treatment

/OQUA

MUNICIPAL WASTEWATER



Who We Serve...



Page 6 ©2018 Evoqua Water Technologies

Evoqua Wastewater Technologies

Our Goal • Help customers meet the toughest performance requirements with leading expertise and a broad portfolio of wastewater solutions.

KeyBiological systems, clarification,
filtration, anaerobic digestion, ballasted
treatment, odor control, field installation

Key Facts • Number of employees: 300+

- Locations: Waukesha, Thomasville, San Diego, UK
- Strong network of 3rd party sales reps













INTRODUCING OUR NEW VP of MARKETING & COMMUNICATIONS

Stacy Stevens, The Water Council





HELLO.





NEW MEMBERS

















condorchem envitech

smart ideas for wastewater & air treatment











MY H20 STORY





SCOUT LAKE GREENDALE

SOUTH PARK, PA



SCIOTO RIVER COLUMBUS, OH



RIVER - IIIII (1932) (Sel 12) SEINE PARIS

Amstel River

AMSTERDAM





MIDDLE GENESEE LAKE

VILLAGE OF SUMMIT



MY BACKYARD POND

RIVERWEST

SOUTH MENOMONEE CANAL

WALKER'S POINT



Your turn.

What's your H20 story?

SHARE YOUR NEWS and EVENTS

MARKETING@THEWATERCOUNCIL



MARATHON MACHINES MOVES TO THE DAIRY STATE

From one of the first 40 employees at Adobe to working for Steve Jobs at Apple, Glenn Reid has a histo current startup Marathon Machines back to Milwaukee, Wisconsin. With more affordable space in Milv expensive), he relocated his business in a warehouse on St. Paul Avenue.

Read more about Glenn Reid's vision for Marathon Machines in Milwaukee.



TWC LOGO = TRUST & YOU SEO

www.thewatercouncil.com > News > Press Kit > Logo

Welcome to A. O. Smith Corporation

Everybody loves a hot shower. We all appreciate the convenience of clean clothes and dishes. And what can be more enjoyable than a relaxing dip in a hot tub or whirlpool? There's nothing like hot water, and one company has been delivering the world's hot water for more than 80 years...A. O. Smith. But today's A. O. Smith is about more than hot water. We recently entered the water treatment industry to deliver clean water to consumers in China and other fast-growing parts of the world. It's all about water, and A. O. Smith has a singular focus on becoming a global leader in water technology.

Find A Local Installer





Download the 2018 Annual Report



PROUD MEMBER



A. O. Smith Innovating for Tomorrow

WORLD ALLIANCE for EFFICIENT SOLUTIONS

info@hydraloop.com

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Hydraloop is a member of:





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LEADERS

2020 MEMBER MEETINGS





AmazonSmile donates 0.5% to the charity of your choice.

Won't you choose us?

marketing@ thewatercouncil.com

WE'D LOVE TO HEAR FROM YOU



FUTURE WATER LEADERS FUND – AWARD PRESENTATION

Karen Frost, The Water Council Kari Kennedy, Aveda/Neroli



CONGRATULATIONS!

Linking Water Age to Bacterial Growth in a Tap Water Distribution System

Max Spehlman – University of Wisconsin – Milwaukee, School of Freshwater Sciences

Low-Cost Fast-Data Particle Sensor for Harbor Monitoring

Basil Hable, University of Wisconsin – Milwaukee Andrew Thompson, University of Wisconsin – Milwaukee



FRESHWATER COLLABORATIVE OF WISCONSIN

Eric Leaf, University of Wisconsin – Milwaukee





Freshwater Collaborative of Wisconsin

December 12, 2019

Eric Leaf, Assistant Dean, School of Freshwater Sciences UW-Milwaukee

Moving Wisconsin and the World Forward

Capitalizing on Wisconsin's Leadership in **Freshwater**

Finding Solutions & Developing the Workforce

Water \rightarrow a global issue:

- Single greatest resource challenge of the 21st c
- Water sector global economy \rightarrow \$500B/yr
- \$23T to deal with supply, aging infrastructure, and global change by 2030¹

and a **Wisconsin** issue:

"Every Wisconsinite should have access to safe, clean drinking water." Speaker Robin Vos

"2019 is the Year of Clean Drinking Water in Wisconsin." Governor Tony Evers



WHY WATER?

¹ Water Matters: Venture Investment Opportunities in Innovative Water Technology, Artemis Project 2008



WISCONSIN WATER FACTS

- 2 GREAT LAKES WITH 820 MILES OF COASTLINE
- More than 15,000 Inland lakes
- NEARLY 200 MILES OF MISSISSIPPI RIVER SHORELINE - THE LARGEST RIVER IN NORTH AMERICA
- 32,000 MILES OF RIVERS AND STREAMS
- 15% WATER (BY SURFACE AREA)
- 3 PRINCIPAL AQUIFER SYSTEMS WITH
 1.2 QUADRILLION GALLONS
 (1 MILLION BILLION)



Agriculture



- \$88 billion GDP
- 415,000 jobs
- Uses 583 million gallons of water per day.
- Requires high quality water
- Impacts other sectors of water economy.

Commercial Fisheries



- \$32 million GDP
- 820 jobs
- Managing fisheries, both commercial and recreational, requires expertise in resource management, fisheries, biology and ecology.

Energy Production



- Wisconsin's Energy Producers withdrew 4.2 billion gallons of water in 2015, producing almost 65 million megawatt hours of electricity necessary to supply all users.
- The energy industry needs policy analysts, fisheries experts, water resource and quality experts, engineers and others.

Manufacturing



- \$58 billion GDP
- 475,000 jobs
- Risk to water supply is number one global threat.
- Most plants would shut down in under 4 hours if water supply were cut off.

Mining



- \$3.7 billion GDP
- 24,029 jobs
- Mining withdrew 29.3 million gallons of water in 2015.
- Industry requires large numbers of hydrologists, natural resource experts, engineers, and scientists.

Recreation and Tourism



- \$20.6 billion impact on economy
- Almost 200,000 jobs
- Drew 110 million people in 2017
- Wisconsin is ranked 5th in the nation for registered boats with over 625,000.
- There are over 300 marinas in the state.
- Recreational fishing alone supports \$2.75 billion in economic impact and supports 30,000 jobs

Shipping



- •\$1.6 billion GDP
- •10,000 jobs
- •20 commercial ports
- •30 million tons of cargo valued at over \$2.4 billion
- •Additionally, ship building accounts for 5,800 jobs and \$1 billion GDP

Water Infrastructure



- Public water supply and domestic use totaled over 555 million gallons per day.
- •Wisconsin will need to invest in \$1 billion of drinking water infrastructure and \$6.33 billion of wastewater infrastructure alone to remain competitive in the global marketplace.
- •The civil consulting needs civil engineers, microbiologists, geoscientists and others.
- Public Health departments require scientists and pathologists
- •Utilities require wastewater engineers, policy analysts and other skilled positions.

Water Technology



- •200+ Companies in WI; Largest cluster in the world
- •37,000 jobs
- •\$5.7 billion in annual sales
- •Needs mechanical and electrical engineers, scientists, and water business/finance experts.

Meeting Wisconsin's Needs:

Freshwater is tied to economic development and workforce development.



WHY WATER WHY MILWAUKEE GLOBAL IMPACT PROGRAMS RESEARCH EVENTS GET INVOLVED

WHY-WISCONSIN?



OVER 200 WATER TECHNOLOGY COMPANIES

- the premier water cluster in NA
- Economic development thru 2016 \rightarrow \$500m



RIPPLE EFFECTS



WATER TECHNOLOGY

WATER TECHNOLOGY EXPERTISE RUNS DEEP IN WISCONSIN

With the two largest Great Lakes—Lake Michigan and Lake Superior—and the Mississippi River forming three of Wisconsin's borders, plus 15,000 lakes within the state's boundaries, Wisconsin has made the most of its unique geography to build core industry strengths that draw

COMPANIES REPRESENTING WISCOMPSINGS WATER SECTOR upon abundant fresh water. And tapping this precious natural resource to create commercial activity and improve the lives of our citizens, we've also learned to treat it with the respect it deserves. When it comes to using water in a sustainable manner, Wisconsin possesses world-leading knowledge based on a long history of innovation.

The concentration of global water industry leaders and the presence of <u>The Water Council</u> in Wisconsin have bolstered a reputation for the state as an authority on water technology advancements. Milwaukee is one of only two North American cities in the elite list of 13 worldwide United Nations Global Compact Innovating Cities (UNGCCP) and the only one in the world focused on the full cycle of water.

>>Forbes article on Milwaukee's globally recognized success as a water technology Mecca
>>Read about The Water Council's U.S. Small Business Administration's innovation cluster grant.
>>Learn more about The Water Council's JPMorgan Chase & Co. grant.



MAIL COLEMAN

Email Coleman Peiffer or call him at 608.210.6714 to learn more about the business opportunities and perfect Wisconsin location for your next project.

MARKETPLACE: ONCE FAMOUS FOR BEER, MILWAUKEE NOW BETS ON WATER

Read the Marketplace report on the growing cluster of Milwaukee companies dedicated to solving the world's water woes.

WALKER'S POINT NEIGHBORHOOD ECONOMIC INVESTMENT ANALYSIS

Download the complete report on the impact of economic investments in Milwaukee's water technology district.

INDUSTRY PROFILE Download the complete report on water technology advancements in Wisconsin.

The silicon valley of freshwater Leadership as a Water-Centric region



Demand for a workforce

- 78% of all jobs globally are water-dependent (UNESCO)
- Fastest growing sector of world economy
- Wisconsin industries are facing significant workforce shortages
- Survey = 68% of WI water sector employers struggle to find well prepared employees
- The number of college-age Wisconsin residents is declining. Eighteen of the 29 most common occupations that require a BA/BS or higher had fewer Wisconsin grads in 2016 than the estimated number of water sector job openings available.

2017 Water Sector Employer Survey

Conducted in Summer 2017

114 Respondents Completed Survey

Agriculture				
Environmental Consulting/Civil Engineering		new hires required extensive training in water-related issues, technologies or processes.		
Food and Beverage				
Hospitals and Healthcare		A plurality favored water-		
Government Agency		focused degree programs with specializations. water-related positions were a growth area in their organizations ~ 50%		
Manufacturing				
Water Technology				
Non-Profit				
Utilities				

Careers related to the water sector make up 2% of the state's workforce!



Home / Local / Article

EPA warns of aging workforce within water industry



By Brittany Schmidt | Posted: Wed 5:06 PM, Jun 26, 2019 | Updated: Wed 6:18 PM, Jun 26, 2019

🛉 🔽 in <mark>8+</mark> 🖂 🚍

GREEN BAY, Wis. (WBAY) -- "If we don't take the time to train, diversify the workforce and bring in the next generation of water and waste-water treatment operators, the people who protect us every day, are not going to be there in 10-15 years," said David Ross, assistant water administrator with the Environmental Protection Agency.

"If we don't take the time to train, diversify the workforce and bring in the next generation of water and waste-water treatment operators, the people who protect us every day, are not going to be there in 10-15 years."

"The money we throw in to build infrastructure, if you don't have the workforce to run it, you are not protecting those taxpayer investments."



David Ross, Asst. Administrator, USEPA Office of Water



! Unleash UWS collective assets

- ! Elite program of training and research
- ! Launch talent development multidisciplinary course of study across UW campuses.

Freshwater Collaborative of Wisconsin

→ A System-wide, one-of-a-kind network of undergraduate programs in Freshwater

→ Solution-focused research on Wisconsin's (& the world's) water issues



Freshwater Collaborative: Meeting Wisconsin's Needs





WISCONSIN SYSTEM

Freshwater Collaborative of Wisconsin

- UW-Eau Claire—Surface & ground water chemistry and bathymetric mapping
- UW-Green Bay—Great Lakes coastal science and agricultural water management
- UW-LaCrosse—River science, nutrient dynamics, and invasive species
- UW-Madison—Watershed/Ecosystem resource management and water treatment engineering
- UW-Milwaukee—Water Technology, toxicology and health, urban water Systems, Great Lakes
- UW-Oshkosh—Certified water quality testing, recreational water and sustainable stormwater treatment technology

Freshwater Collaborative: Meeting Wisconsin's Needs



WISCONSIN SYSTEM

Freshwater Collaborative of Wisconsin

- **UW-Parkside**—Biomonitoring, restoration, remediation, and habitat management
- UW-Platteville—Engineering, agriculture, and water infrastructure and waste management applications
- UW-River Falls—Agricultural water management, Ag Engineering
- UW-Stevens Point—Fisheries & aquatic sciences, resource management and aquaculture/aquaponics
- UW-Stout—Environmental science, applied social science and conservation biology
- UW-Superior—Aquatic invasive species research, ballast water and shipping, and environmental toxicity testing
- UW-Whitewater—Water business, law and finance; water quality, safety and emerging contaminants

Freshwater Collaborative: Meeting Wisconsin's Needs

The Freshwater Collaborative will...

...make the 13 Campuses of the University of Wisconsin System the best place in the world to study fresh water.

Establish the nation's most significant, integrated, multiinstitutional higher education program serving the freshwater economy.

Attract local, regional and global **talent** to Wisconsin. Fill the global, regional, and local demand for a water workforce through explicit structuring of curriculum, training, and workplace experience.

Help solve local, regional, and global water resource problems through collaborative research across disciplines. Solidify Wisconsin's world leadership in freshwater science, technology, entrepreneurship, and economic growth.

FRESHWATER COLLABORATIVE – TEN GRAND WATER CHALLENGES



Agricultural Water Management



Industrial Water Engineering and Technology



Water Quality Safety and Emerging Contaminants



Great Lakes Management and Restoration



Water Infrastructure: Collection, Distribution, Treatment





Watershed Management and Restoration



Water Security, Protection and Resilience



Healthy Recreational and Transportation Water Use



Aquaculture, Aquaponics and Water Food Systems

FRESHWATER COLLABORATIVE FIVE CROSS-CUTTING THEMES



FRESHWATER COLLABORATIVE CONCEPT MAP



Brand Recognition to Recruit the World 4.4.4

New Educational **Pipelines**

Elements of a System-wide FCW:

- Interdisciplinary by nature of the subject –
- Multiple pathways ~ focus of course of study
- Maximizes & capitalize on the strengths of each campus
- Highly Individualized ~ student chooses a path to degree
 - Combination of
 - Flexibility individually designed based upon students' interest
 - Core requirements rigorous standards, areas of competency, demonstration of achievement
 - Seamless: no impediments to curriculum/coursework/credit across System.
 - Admission to one is admission to all
- Uniqueness stands out from existing programs at other Institutions
- Keep, Attract & Grow talent global recruitment & local retention
- Leverage WI's assets



New Pathways



Sample Path – Water Major

Home Campus and Major

Amanda Carpenter is recruited from Minnesota to the Fresh Water and Resource Management Program at UWSP. She receives a scholarship that covers 25% of tuition. Amanda completes required GEs and Major coursework at UWSP.	FWU Electives		
	Amanda participates in a Great Lakes Immersion Semester experience offered by Milwaukee, Green Bay and Superior. This combination of courses and field experiences count for 15 credits, which transfer back to UWSP as elective credits and also result in Amanda earning a certificate.	Internship Advanced Coursew	
		During the summer of her junior year, Amanda participates in a paid, for credit-internship at Brown and Caldwell, a national engineering and consulting firm with operations in Wisconsin.	Amanda completes her advanced coursework and graduates with a BS desgree from UWSP . Amanda's transcript shows she completed a degree in "Fresh Water and Resource Management."

Amanda takes a position in the consulting industry.

rk

Sample Path – Water Minor

Home Campus and Major

Duane Washington is an economics major at UWGB. After taking a Freshwater 101 course he decides to complete the FWU Minor in Freshwater Studies , also at UWGB.	FWU Field Experiences			
	Although most of his work is completed outside FWU, Duane takes full advantage of many of the offerings across System. He participates short programming via a week- long Mississippi River course at UWL and travels to Laguna Bacular in Mexico with UWM.	Research Experience		
		As an economist minoring in water, Duane is a perfect candidate for work in the water policy realm. He takes a summer internship at the Center for Water Policy at UWM.	Advanced Coursework	

Duane lands a job in the

energy company.

compliance office at a major

Sample Path – 5-year Master's

Home Campus and Major

Marcia Pilar is recruited from Indianapolis after receiving a scholarship covering 25% of her non-resident tuition. She decides to major in Fresh Water and Aquatic Sciences at UWL. She knows she wants a MS as well, so she follows the guidelines for the 4+1 program with UWM.	Minor/Certificate			
	Marcia is interested in agricultural issues, and so spends an Immersion Semester at UW- Platteville in order to complete a certificate in Water and Agriculture . She also takes advantage of several water resource management experiences offered by UWSP.	Internship		
		Continuing her emphasis in agriculture, Marcia takes an internship with Alsum Produce to help assess the potato grower's water use and environmental impacts.	Advanced Coursework	
			Marcia completes her advanced coursework and graduates with a BS desgree from UWL . She then completes a year in UWM's School of Freshwater Sciences, earning her MS.	
			Her transcript shows she has earned a Fresh Water and	

Aquatic Sciences degree from UWL and a master's degree in Freshwater Sciences and Technology from UWM.

World-Class Research and Innovation with Local, National and Global Impact



Increased Research Capacity



Working with Industry and the Community

Industry, Government and Employers

Industry Advisory Board

•Traveling Career Day

Internship Programs

•Water Fellows Program in State Government

•Water Council Membership

FWC as Community Resource

Speaker/Experts

Student Water Ambassador Program

Annual Science Olympiad

Center for Water Policy

Other Outreach Programming



MemberDR0PS



THANK YOU FOR HOSTING!



