

BIO SOLIDS CAN YOU DIG IT?

September 9-11, 2018 ↓ Campbell's Resort ↓ Lake Chelan, WA



SUNDAY & SEPTEMBER 9

Opening Session

2:00 PM REGISTRATION

3:00 PM NORTHWEST BIOSOLIDS KICKOFF MEETING

4:00 PM BREAK

4:15 PM REGULATIONS ROUNDTABLE

MOD: Dan Thompson, City of Tacoma-TAGRO

6:00 PM VENDOR SOCIAL HOUR

MONDAY & SEPTEMBER 10

7:30 AM BREAKFAST

Opening Session

MOD: Rebecca Singer, King County

8:30 AM NORTHWEST BIOSOLIDS WELCOME & AWARDS

9:00 AM THE NEW SCIENCE OF POOP IN HEALTH AND DISEASE: WHY FECAL MATTERS

9:30 AM CAN BIOSOLIDS IMPROVE SOIL QUALITY/SOIL HEALTH ASPECTS?

10:00 AM BREAK & POP-UP POSTER SESSION

Digging Into Biosolids Treatment

MOD: Ian McKelvey, Brown & Caldwell

10:30 AM LIQUID BIOSOLIDS: A CONTRADICTION

10:55 AM CENTRIFUGE BIOSOLIDS: POOP TO LOOP

11:15 AM SCREW PRESS BIOSOLIDS: PRESSING A BIOSOLIDS PRODUCT

11:35 AM TROUBLE SHOOTING AEROBIC DIGESTION

12:00 PM LUNCH

Digging Into Biosolids & Soils

MOD: Jake Finlinson, King County

1:00 PM SOIL VARIABILITY AND THE USE OF BIOSOLIDS

1:30 PM GONE WITH THE WIND: TALES OF SOIL SAMPLING IN EASTERN WASHINGTON

1:50 PM SOIL SAMPLING IN NORTHWEST WASHINGTON

2:10 PM CONSIDERATIONS IN SAMPLING FOREST SOILS FOR BIOSOLIDS APPLICATION

2:30 PM BREAK

Digging Into Data

MOD: Peter Severtson, Washington State Department of Ecology

2:45 PM THE IMPORTANCE OF PROPER SOIL SAMPLING

3:20 PM UNDERSTANDING BIOSOLIDS DATA

3:50 PM MAKING SENSE OF SOIL ANALYSIS DATA

4:20 PM BIOSOLIDS SAMPLING & ANALYSIS: WHY DETAILS MATTER

4:45 PM SESSIONS ADJOURN

After Hours Fun

5:00 PM BIOFEST FUN RUN/WALK

5:30 PM VENDOR SOCIAL HOUR

6:00 PM NW BIOSOLIDS 31st ANNIVERSARY BANQUET

TUESDAY & SEPTEMBER 11

7:30 AM BREAKFAST

Digging Into Research

MOD: Karri Ving, San Francisco Public Utilities Commission

8:30 AM UNIVERSITY OF ARIZONA BIOSOLIDS UPDATE: NEW CONCEPTS & TECHNOLOGIES

9:00 AM CONNECTING ORGANICS & SOIL: AN OVERVIEW OF WASHINGTON STATE UNIVERSITY RESEARCH

9:25 AM LEAGUE OF EXTRAORDINARY SCIENTISTS:
A GLIMPSE INTO THE NATIONAL BIOSOLIDS RESEARCH COLLECTIVE

9:50 AM UNLOCKING DIGESTER FOAMING ISSUES THROUGH RESEARCH

10:10 AM SPEAKER Q&A

10:30 AM BREAK & POP-UP POSTER SESSION

Digging Into Product Utilization

MOD: Ryan Batjiaka, San Francisco Public Utilities Commission

11:00 AM SOIL AMENDMENTS AND CROP NUTRIENT QUALITY

11:30 AM BIORETENTION SOIL MIXTURES

12:00 PM LUNCH

Digging Into Biosolids Business

MOD: JR Inman, Northwest Cascade Inc./FloHawks Plumbing & Septic

1:00 PM CUSTOMER SERVICE

1:15 PM BIOSOLIDS MARKETING & COMMUNICATIONS TOOLKIT

1:40 PM BIOSOLIDS AS A VALUE-ADDED PRODUCT

2:05 PM BIOSOLIDS CONTINGENCY PLANNING

2:30 PM BREAK

Digging Into Start-Ups

MOD: Dan Eberhardt, City of Tacoma-TAGRO

2:45 PM THE PATH TO 100% BENEFICIAL REUSE: CITY OF COLUMBUS

3:10 PM PLANNING A BIOSOLIDS RECYCLING PROGRAM IN BELLINGHAM

3:30 PM CHANGING COURSE: A NEW DIRECTION FOR SAN FRANCISCO BIOSOLIDS

3:50 PM BIOSOLIDS SHARK TANK

4:45 PM BIOFEST RAFFLE

5:00 PM CONFERENCE ADJOURNS

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SUNDAY & SEPTEMBER 9

2:00 Registration

3:00 Northwest Biosolids Kickoff Meeting

Join our opening meeting to learn more about Northwest Biosolids during this unique networking forum. This interactive meeting will include highlights, projects on the horizon and an opportunity to share challenges and query the collective network in the room on potential solutions.

4:00 Break

Regulations Panel & Roundtable

4:15 | **MODERATOR:** Dan Thompson, City of Tacoma - TAGRO

Hear from representatives from around the region on some of the regulations opportunities and challenges facing biosolids professionals. The roundtable portion will encourage an interactive Q&A session with participants.

6:00 Vendor Greeting & Social Hour

Open your conference experience by mingling with fellow attendees and get a chance to meet conference exhibitors. Light hors d'oeuvres will be served.



POP-UP POSTER PRESENTATIONS

10:00 (Mon) & 10:30 (Tues)

Make the most of your breaks and listen in on our pop-up poster presentations hosted during select conference breaks. You'll learn about some of the Northwest Biosolids funded research happening at our local university partners.

MONDAY 6 SEPTEMBER 10

7:30 Breakfast

OPENING SESSION

MODERATOR: Rebecca Singer, King County

8:30 Northwest Biosolids Welcome & Awards

The New Science of Poop in Health and Disease: Why Fecal Matters

9:00 Mehrbod Estaki, University of British Columbia Okanagan, Kelowna, Canada

In this talk, Mehrbod will discuss the current understandings of how stool samples can be used in screening and diagnosis of numerous diseases, predicting patients' response rate to pharmaceuticals, and even treatment of various illnesses ranging from IBD to Autism.



MEHRBOD ESTAKI is in the final semester of his PhD program in Dr. Deanna Gibson's Centre for Microbiome and Inflammatory Research located in Kelowna BC. His research focuses on the role of intestinal microbes in health and disease, specifically in the context of exercise and inflammatory bowel diseases (IBD). Having experienced first hand the power of poop in treating his own IBD, Mehrbod has dedicated his academic pursuits in understanding the mechanisms by which feces has been successfully used for thousands of years in treatment of various illnesses in animals and humans.

Can Biosolids Improve Soil Quality/Soil Health Aspects?

9:30 Jim Ippolito, Colorado State University

Elevated soil quality (i.e., soil health) is based on the premise that soils have the ability to optimally function within natural or managed (agro)ecosystems to sustain plant productivity and to create an environment conducive to system resiliency. Global evidence suggests that biosolids land application can positively alter some function(s) within the soil quality concept, yet to date no one has effectively tackled this concept within the context of biosolids land application. This presentation will draw upon a 22 year biosolids wheat research program, attempting to answer the question "Can biosolids really improve soil quality/soil health aspects?"



DR. JIM IPPOLITO is an associate professor of environmental soil quality in the Department of Soil & Crop Sciences at Colorado State University. He has 30 years of experience studying nutrient/trace/heavy metal fate, sorption, and transport within numerous (agro)ecosystems following waste land application (e.g., biosolids, biochars, manures, drinking water treatment facility residuals). He has (co)authored over 170 peer-reviewed and non-refereed publications. He also provides leadership at the local through international levels with respect to land application issues, is active in the Soil Science Society of America and American Society of Agronomy, and is a past associate editor for the Journal of Environmental Quality and a former USDA-Agricultural Research Service Soil Scientist.

10:00 Break & Pop-up Poster Session

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DIGGING INTO BIOSOLIDS TREATMENT

MODERATOR: Ian McKelvey, Brown & Caldwell

10:30 Treatment Introduction

Liquid Biosolids: A Contradiction

10:35 | Dan Thompson, City of Tacoma-TAGRO

How do liquid biosolids fit into a diverse biosolids management program? What advantages does a liquid program offer and under what conditions does it make sense to include this option in a diversified program? What controls are necessary to ensure a successful liquid application program? Tacoma has been applying liquid biosolids as part of its program for more than 30 years. This talk will explore lessons learned in working with customers and neighbors in liquid land application programs. It will also address critical product quality aspects of liquid materials and how to balance a suite of biosolids reuse options (including liquid land application) under a variety of economic and ecological circumstances.



DAN THOMPSON is the division manager of Business Operations for the City of Tacoma Environmental Services Department. He has over 30 years experience in the environmental field including 25 years in water, wastewater, and biosolids management. Dan has a Bachelor of Science degree in forest management from Washington State University and a Masters and PhD in Silviculture from the University of Washington.

Dan began working with biosolids in 1989 designing forest fertilization units for Seattle METRO. He became a Senior Environmental Specialist for the City of Everett in 1993 and created and managed Everett's biosolids management program. Dan has been the manager of Tacoma's TAGRO class A biosolids program since 2002. He has overseen the development of numerous biosolids derived soil products including TAGRO Potting Soil, Top Soil, Roof Garden Mix, and Mulch.

Centrifuge Biosolids: Poop to Loop

10:55 | Scott Drennen, King County

The South Plant story of how a pioneer in Forest application of Biosolids was nearly lost then recovered as we moved from Belt Filter Press operation to Centrifuge technology. Our story is how our competing goals of upgrading our facility to Centrifuge technology and producing a drier product for hauling purposes led us to utilizing a specialized dewatering team to reduce operating cost and create specialized Class B products for our Forestry and Agricultural application sites. The new Centrifuge process produced a biosolids too dry for an agronomic application in the forest, leaving us unable to meet our commitment to our forestry projects. The mission was to produce a consistent product by the operations staff and to develop a new way of operating a Centrifuge to make a product similar to a Belt Filter Press.



After graduating from the University of Montana in 1986, **SCOTT DRENNEN** began working in sales selling soil for Coles Plant Soil. They carried a product named SteerGro. He later decided to change career paths to pursue a career in wastewater treatment returning to school at Green River Community College. Scott was soon hired by King County at the South Treatment Plant as an operator then senior operator. In 2003, his path came full circle as an opportunity to become a lead in dewatering biosolids presented itself. My destiny to be a soil guy stuck as a new position to produce biosolids that were being used as the primary ingredient to produce a product from a company named "GroCo" it was meant to be. Today we produce 60,000 wet tons of class B biosolids a year.

Screw Press Biosolids: Pressing a Biosolids Product

11:15 | JR Inman, Northwest Cascade Inc./FloHawks Plumbing & Septic

Learn how FloHawks is using a compact, custom fit screw press process to treat their septic solids collected from across the Pacific Northwest. Take a journey through their septage treatment facility to learn what their drivers were to move towards the screw press process, what operations lessons they have learned along the way, and future plans for the facility and product.



J.R. INMAN has worked with Northwest Cascade Inc./ FloHawks Plumbing & Septic for over 39 years. He has performed work and managed the service plumbing, septic pumping group for 26 years. JR is licensed in a dozen counties in Washington State as a pumper, operation and maintenance specialist and septic installer, also manages a septic / wastewater treatment plant and concrete batch plant. JR has served on many different boards including National On-Site Wastewater Recycling Association & Northwest

Bio-Solids Management Association. JR is also Past President of Washington On-Site Sewage Association and is a certified instructor for on-site education.

Trouble Shooting Aerobic Digestion

11:35 | Andy O'Neill, Washington State Department of Ecology

The most commonly utilized solids stabilization process in the US for small to medium sized wastewater treatment plants is aerobic digestion. In theory, the aerobic digestion process is relatively simple. However, without understanding key operational procedures and monitoring digestion performance, achieving long-term solids handling goals is challenging. Andy will provide an overview of the importance of temperature control, oxygen transfer and mixing, nitrification and denitrification, solids retention time, pH control, sludge loading characteristics, and tank configuration.



ANDY O'NEILL is a technical assistance provider in the Department of Ecology's water quality program. He holds valid wastewater treatment Level IV certifications in the states of Washington, Idaho, and Oregon. Andy received his MA in Organizational Leadership from Gonzaga University and is a specialist in wastewater certification training, process control, asset management, and regulatory compliance reporting.

His background includes serving in various roles such as a wastewater treatment plant operator, facilities manager, board member for the state of Washington's Wastewater Certification Advisory Committee, past president of the Water Environment Federations (WEF) member association Pacific Northwest Clean Water Association (PNCWA), and an active member of the Association of Boards of Certification (ABC) Wastewater Scheme Committee.

12:00 | Lunch

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DIGGING INTO BIOSOLIDS & SOILS

MODERATOR: Jake Finlinson, King County

1:00 Biosolids & Soils Introduction

Soil Variability and the Use of Biosolids

1:05 | Ryan Batjiaka, San Francisco Public Utilities Commission

Soils are a motley bunch and their variability can affect how biosolids are applied for agriculture and other uses. This presentation will first discuss the basics of how soils can be distinct from one another. Then we will look at how these traits should be taken into consideration for biosolids application.



RYAN BATJIAKA works for the San Francisco Public Utilities Commission on their biosolids program. He has a master's in soil science from the University of Washington. Ryan believes strongly in the necessity of returning organic matter to soils in order to meet the environmental challenges we will be facing in the coming decades.

Gone with the Wind: Tales of Soil Sampling in Eastern Washington

1:30 | Brian Campbell & Nebayot Chalma, Natural Selection Farms

We live by our motto, *Our Soil – Our Strength*, and value the information we can get from soil sampling farmers fields and seeing improvements made over the years from biosolids applications. Every field has a story to tell, hear some of the challenges and successes our farm has had with our soil sampling program.



BRIAN CAMPBELL is the Biosolids Coordinator for Natural Selection Farms. His responsibilities as Biosolids Coordinator include managing the land application of biosolids for 30 different municipalities, hauling logistics of Class B biosolids and leading a team of spreader operators and CDL truck drivers.

NEBAYOT CHALMA is the Soil Sampler for Natural Selection Farms. With 10 years of experience running our Kaufmann soil sampler he has sampled over 35,000 acres of fields. He enjoys the views from his tractor and seeing the different soil types.



Soil Sampling in Northwest Washington

1:50 | Kurt Bartelheimer, Elysian Fields

Western Washington has a unique set of attributes that can be a blessing or a deterrent for biosolids utilization. From sunshine to rainfall and urban sprawl to protective land use, join us as we explore the who, what, when, where, why, and how of soil sampling and biosolids utilization in Western Washington.



KURT BARTELHEIMER is a life-long farmer in Snohomish, Washington (25 miles north of Seattle). Kurt lives on the family dairy farm and has utilized biosolids since 2008. He is also the president of Elysian Fields, a biosolids beneficial use facility, and the contract applicator for King County's forestry program.

Considerations in Sampling Forest Soils for Biosolids Application

2:10 | Ben Axt, King County

In this presentation we will look at the differences and challenges in sampling forest soils including sampling location selection, topographic variability, soil nitrogen variability, and hydrologic considerations.



BEN AXT graduated from the University of Wisconsin – Madison with a BS in Forestry. Before starting with King County's Loop program in 2017, he spent 15 years restoring wetland hydrology, rare habitats and species, and agricultural drainage.

2:30 Break

DIGGING INTO DATA

MODERATOR: Peter Severtson, Washington State Department of Ecology

2:45 Data Introduction

The Importance of Proper Soil Sampling

2:50 | Jim Ippolito, Colorado State

Proper soil sampling provides a measure of average soil fertility, resulting in more accurate biosolids application rates to meet crop nutrient demands. But how do you know if your soil sampling scheme is robust enough to fully represent average field conditions? How can you soil sample to accurately represent average field conditions? Why are two soil samples essentially adjacent to one another different in terms of analyses? This presentation will focus on when and how deep to sample, and how many soil samples should be obtained to best accurately represent field conditions, leading to proper biosolids land application rates.

Understanding Biosolids Data

3:20 | Erika Schwender, Professional Training Association

Making sense of the valuable data points from a biosolids lab analysis. To break down the pieces of what goes into a biosolids lab analysis, proper measures, best practices in biosolids lab analysis and understanding what this biosolids data means in terms of regulatory compliance and building a successful biosolids program.



ERIKA SCHWENDER is the current Executive Director for Professional Training Association, a non profit organization providing training and technical assistance to water and wastewater utilities. Throughout the last 27 years Mrs. Schwender has been employed by local and state agencies as well as private industry to provide regulatory, laboratory, and process support to water and wastewater treatment operations. Erika has a BA in Chemistry, is a Board Certified Environmental Professional, and holds current certifications as a Group IV Wastewater Operator, Group III Drinking Water Operator.

Making Sense of Soil Analysis Data

3:50 | Kyle Bair, Soiltest Farm Consultants, Inc.

Soil tests can be very useful in diagnosing and treating soils for optimal crop growth. But what do all of the numbers mean? This talk will focus on taking good samples for laboratory analysis and how to correctly interpret the data once the analysis is complete.

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KYLE BAIR is currently the President of Soiltest Farm Consultants, Inc. in Moses Lake, WA. Kyle has been a soil scientist with the company for 10 years, teaching introductory soil science at Big Bend Community College. He graduated with a PhD in soil science from WSU in 2012. Worked as research associate at WSU and lab technician at BYU. Past research has focused on soil fertility (especially phosphorus), use of legume cover crops in organic juice grape production, and various laboratory method analyses. Kyle is married with five kids.

Biosolids Sampling & Analysis: Why Details Matter

4:20 | Peter Severtson, Washington State Department of Ecology

Biosolids sampling is required under Washington rules, but many folks don't understand the real-world connections. This talk will cover the basics of sampling and relate the results to the soils and crops for which they are land applied.



PETER SEVERTSON has been the Central Region Biosolids Coordinator with the Washington State Department of Ecology since 2012. Peter graduated with a B.S. in Forestry Management/Silviculture and M.S. in Forest Soils from the University of Washington. Peter is an avid paraglider, has served as a professional Ski Patrol for 30+ years and is a licensed slow blaster.

4:45 | Sessions Adjourn

AFTER-HOURS FUN

BioFest Fun Run/Walk

5:00 | River Walk Park

Vendor Social Hour

5:30 | Campbell's Beach Lawn

Northwest Biosolids 31st Anniversary Banquet

6:00 | Campbell's Beach Lawn

The banquet will feature a full dinner, hosted beverages and ample opportunity to meet new colleagues and reconnect with those you've known for years.

TUESDAY 6 SEPTEMBER 11

7:30 Breakfast

DIGGING INTO RESEARCH

MODERATOR: Karri Ving, San Francisco Public Utilities Commission

8:30 Research Introduction

University of Arizona Biosolids Update: New Concepts & Technologies

8:35 | Ian Pepper, University of Arizona

New Concepts. Land Applied Class B Biosolids on Pecan Orchards. There are 20,000 acres of pecan orchards in Arizona, and pecans have a large requirement for the micronutrient Zn. Currently pecan orchard management necessitates 10 foliar applications of Zn annually, due to high soil pH which makes Zn unavailable. We are evaluating the ability of biosolids to supply available Zn in a chelated form, to negate the need for foliar applications.

We are also evaluating a new real-time (< 5 minutes), portable technology for the evaluation of soil health – “the holy grail of soil scientists.” This concept, developed by us, here at the UA involves looking at the ratio of AMP/ATP to evaluate the activity and stress level of soil microbial communities. Preliminary data are very exciting and informative.

New Technologies. We are evaluating a new sidestream treatment of high ammonia effluent derived from the dewatering of Class B biosolids. This involves anaerobic oxidation of ammonia or anammox. If successful this technology will save Pima County Wastewater \$500,000 annually.



DR. IAN PEPPER is currently Professor at the University of Arizona. He is also Director of the University of Arizona, National Science Foundation Water & Environmental Technology Center (WET), and Co-Director of the new Water and Energy Sustainable Technology Center known as WEST. Dr. Pepper is an environmental microbiologist whose research has focused on the fate and transport of pathogens in air, water, soils and wastes. More recently he has developed the University of Arizona, Real-Time Sensor Laboratory. His expertise has been recognized by membership on 6 National Academy of Science Committees. Dr. Pepper is a Fellow of the American Association for the Advancement of Science, the American Academy of Microbiology, the Soil Science Society of America, and the American Society of Agronomy. He is also a Board Certified Environmental Scientist within the American Academy of Environmental Engineers and Scientists. He is the author or co-author of eight textbooks, 40 book chapters, and over 160 peer-review journal articles.

Connecting Organics & Soil: An Overview of Washington State University Research

9:00 | Andy Bary, Washington State University

The presentation will discuss recent research on several research areas. The use of biosolids in conjunction with modified tillage in dryland wheat production relating to crop yield and windblown soil loss. At the long-term biosolids dryland wheat research site the effects on yield and carbon dynamics. An overview of biosolids compost use as a nutrient source for golf course fairway fertilization, including nitrogen status, volumetric water holding capacity and a brief overview of fungal and bacterial community structure affects.

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ANDY BARY is a soil scientist and has worked for Washington State University for more than 30 years. He conducts research and educational programing in biosolids management, composting, compost usage, organic cropping systems, nutrient management, and soil science. He has a master's degree from Washington State University.

League of Extraordinary Scientists: A Glimpse Into the National Biosolids Research Collective

9:25 | Maile Lono-Batura, Northwest Biosolids

For some in the biosolids field, it may not be known that a coordinated committee of scientists was formed by the United States Department of Agriculture with a mission to study the beneficial reuse of residuals and reclaimed water, with a focus on understanding the potential hazards and value of wastewater by-products. They utilized their collective expertise to serve as a peer-review contingent for the federal biosolids Part 503 rule and continue to leverage this collective research brain trust to this day. Take a step into a simulated visit to the most recent W3170 meeting in Chicago, IL and some of the latest national research developments presented.



MAILE LONO-BATURA has served as Executive Director of Northwest Biosolids for the past 19 years, dedicating her career to unearthing sustainable solutions through our collaborative biosolids network. Maile earned her Bachelors in Community & Environmental Planning, with an Environmental Studies Minor from the University of Washington. She received her Masters in Non-profit Leadership from Seattle University. Maile is co-chair of the Assoc. of Biosolids & By-products Associations (ABBA) Committee.

Maile continues to find inspiration in the pride and camaraderie that infuses biosolids programs and is honored to lead the biosolids network of the Pacific Northwest. She volunteers as an on-air DJ at KBCS and a community advisor for exhibits at the Wing Luke Museum. Maile enjoys all forms of board riding (street, water and snow), frequenting local music performances and spending time with her family.

Investigating Causes of Anaerobic Digester Foaming

9:50 | Kota Nishiguchi, University of Washington

Foaming during anaerobic digestion at municipal wastewater treatment facilities often results in decreased digester capacity, clogging of gas handling equipment, and safety concerns from overflow of digester contents. To solve issues of foaming, the underlying causes must be identified. This work aims to develop protocols that can help understand and possibly prevent or mitigate the foaming issues encountered at King County's West Point Treatment Plant, South Treatment Plant, and Brightwater Treatment Plant. Sludge characteristics associated with digester foaming, such as the abundance of filamentous bacteria, concentration of surfactants, and solids concentration, will be compared against measurements of viscosity, yield stress, and foaming potential to identify parameters that lead to digester foaming.



KOTA NISHIGUCHI is a Master's student at the University of Washington, studying environmental engineering and researching the presented work under the guidance of Dr. Mari Winkler. While studying at the University of California, Davis, he worked for the City of Sacramento exploring issues in the operation of drinking water treatment facilities. Through previous work experience and ongoing research, he has gained an interest in the methods by which operators identify and solve issues at water and wastewater treatment facilities.

10:10 | Speaker Q&A

10:30 | Break & Pop-up Poster Session

DIGGING INTO PRODUCT UTILIZATION

MODERATOR: Ryan Batjiaka, San Francisco Public Utilities Commission

11:00 | Utilization Introduction

Soil Amendments and Crop Nutrient Quality

11:05 | Sally Landefeld, University of Washington (UW)

My research compares the nutrient quality of crops grown in soils amended with biosolids (TAGRO, GroCo) or compost (bokashi, vermiculture) with crops grown in "conventional" native soil treated with NPK fertilizer. Using cutting-edge techniques, I analyze basic mineral content of garden crops as well as their phytochemical profiles to reveal differences in the content of vitamins and other disease-fighting compounds. The relationship between soil health and crop nutritional value remains largely unknown, leaving me fertile ground for research.



SALLY LANDEFELD is a graduate student in Civil and Environmental Engineering at the UW working with Sally Brown and David Butman to investigate how various soil amendments impact nutrient profiles of common garden crops. With a BA in chemistry from Occidental College and MS in Environmental Science and Engineering from Oregon Health and Science University, Sally has worked in cancer research and sediment microbiology. Her mission is to help effect positive change in our food system by rebuilding thriving ecosystems from the ground up.

Bioretention Soil Mixtures

11:30 | Norah Kates, University of Washington

Bioretention systems need to balance three goals that often compete: good drainage, effective filtration, and plant growth. To reduce excess effluent phosphorus that degrades the water quality in our rivers and lakes, water treatment residuals (WTRs) have been proposed as an amendment material in bioretention soil mixtures. Due to their high content of iron and aluminum oxides, these waste products from drinking water treatment can have a second life helping to retain phosphorus in bioretention systems. This University of Washington study pairs two beneficial waste products - biosolids and municipal composts as fertilizers, and WTRs as phosphorus sinks - to create a better bioretention soil mixture and tailor prescriptions for relative amounts of each based on their individual characteristics.



NORAH KATES is a master's student in the University of Washington's School of Environmental and Forest Sciences. Before going back to school, she worked as a project manager in urban and community forestry and has experience working with non-profits, government agencies, and the public on collaborative programming. She is passionate about urban environmental issues and believes strongly in engaging the public to address problems with science-led solutions.

12:00 | Lunch

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DIGGING INTO BIOSOLIDS BUSINESS

MODERATOR: JR Inman, Northwest Cascade Inc./FloHawks Plumbing & Septic

1:00 Biosolids Business Introduction

Customer Service

1:05 | Tom Campbell, Campbell's Resort

Who better to ask about customer service than the very place we have made our BioFest home for the past 30 years. Learn from this 120-year old family-run establishment that continues to thrive and offer signature service that makes first time visitors, life-long friends.

TOM CAMPBELL is a fifth-generation Campbell, son of Art Campbell III. Tom has experience working in all facets of the resort operation – front desk, restaurant, yard crew – you name it. After pursuing his education, Tom returned to Chelan in 2012 to take post again within his family's legacy of offering a superior Lake Chelan experience.

Biosolids Marketing & Communications Toolkit: Make an Impact with Limited Resources

1:15 | Ashley Mihle, King County

Public awareness and support of your biosolids program and product is critical to the long-term success of biosolids use, but pro-active communications is often something that is not prioritized or well resourced. In this presentation, Ashley will present a basic communications toolkit, with a focus on how to create a big impact with limited resources. Small changes in how an agency talks about their biosolids or shares information can go a long way towards successful community engagement and support.



ASHLEY MIHLE is an environmental scientist and communications manager with King County's Loop® biosolids program, where she works to increase awareness and support of Loop biosolids. She is co-chair of the Northwest Biosolids Outreach and Education Committee. Ashley has a Master of Science and a Master of Public Administration from the University of Washington, with a focus on water resources. She has over a decade of experience in communications, market research, environmental compliance, watershed planning and biosolids.

Biosolids as a Value-Added Product

1:40 | Dan Sullivan, Oregon State University

This presentation will provide research-based information to assist biosolids managers in market development for biosolids products. Specifically, the following topics will be addressed:

1. Value of nutrients in biosolids vs. competing products (fertilizer, other organics)
2. Value of biosolids organic matter
3. Value of trace elements
4. Balance of nutrients supplied by biosolids vs. crop needs



DR. DAN M. SULLIVAN is Professor in the Department of Crop & Soil Science at Oregon State University. His soil fertility and nutrient management program focuses on: 1) Investigating and improving on-farm management practices for organic nutrient sources such as manure, municipal biosolids, and compost; 2) Providing extension clientele and students with actionable research-based information to guide soil fertility and nutrient management decisions. Dan has worked with biosolids as a nutrient source since 1990. His research-based recommendations are summarized in Oregon State University Cooperative Extension publications (available for free download).

Biosolids Contingency Planning

2:05 Laurie Pierce, LOTT Clean Water Alliance

Responsibility for all Operations and Maintenance activities associated with LOTT's facilities, which include a 12MGD (annual avg) Advanced Secondary Wastewater Treatment Plant with 1.5 MGD class A reclaimed water production (at the Budd Inlet Treatment Plant) and a 2 MGD Membrane Bioreactor plant with Total Inorganic Nitrogen Limits of 3mg/L and 10mg/L respectively. Also responsible for LOTT's Asset Management and Capital Planning programs, Labor Negotiations, Succession Planning, Operator Training Program, Safety Program, Water Quality Laboratory and Industrial Pretreatment Programs, management of over 200 acres of property, assisted in development of and accountable for LOTT's 3rd 6-year Performance Plan, annual operating budget, Operational culture-change initiative, change management processes including elimination of graveyard and swing shifts, implementation of remote operational capability, standardization and documentation of LOTT's Process Control strategy and troubleshooting approach, as well as documentation and knowledge-transfer of the facility's Valmet control system as part of an overall succession planning effort, 2018 Graduate of the NACWA Water and Wastewater Leadership Center.



LAURIE PIERCE became the Operations and Facilities Director for LOTT in 2005. She started her career at LOTT in 1991 as an Apprentice Operator, and held numerous positions of increasing responsibility in the Operations and Maintenance work groups over the years. Laurie is now responsible for managing the Budd Inlet Treatment Plant, Hawks Prairie Reclaimed Water Satellite, three pump stations and over 200 acres of property owned by LOTT. Laurie also manages two-thirds of LOTT's work force, the annual operating and maintenance budget for all LOTT facilities, and is accountable for compliance with all regulatory issues relating to our NPDES (National Pollutant Discharge Elimination System) and State Reclaimed Water Permits. With LOTT's support, Laurie earned her Bachelor's Degree in Business Management from the University of Phoenix in 2010. She has two grown sons, Blake and Kramer Skidmore. They all enjoy spending time at the beach, on Hood Canal, and in Eastern Washington camping, fishing, enjoying music and a wide variety of sports.

2:30 Break

DIGGING INTO START-UPS

MODERATOR: Dan Eberhardt, City of Tacoma-TAGRO

2:45 Start-ups Introduction

The Path to 100% Beneficial Reuse: City of Columbus

2:50 Heather Curtis and Josh Lutz, City of Columbus

Heather and Josh will share how the City of Columbus Department of Public Utilities, serving 1.2 million people in Central Ohio, went from a majority incineration based biosolids program to a 100% beneficial reuse of biosolids in less than 10 years. They will present the four major outlets used in the multi-outlet system — the City owned Compost Facility, an offsite anaerobic digester, injection land application to farm fields, and strip mine tree farms. The presentation will cover lessons learned and emerging best practices for daily management of multiple biosolids outlets.



HEATHER CURTIS is the Wastewater Soil Applications Coordinator for the City of Columbus, working with the various biosolids outlets and selling the City's Com-Til biosolids compost. She oversees research on the various biosolids products and engages in public education for biosolids reuse in Central Ohio. She spent years as an environmental scientist working on landfills, water quality issues, and soil health. Heather has a BS in Soils from The Ohio State University and is currently pursuing a MS in Soils with Dr. Nick Basta. She is excited to help bring Central Ohio to the forefront of responsible nutrient recycling with the City of Columbus' 100% Beneficial Reuse Biosolids plan.

CAN YOU DIG IT?

15



JOSH LUTZ has been in the biosolids industry nearly all his life. He started his career on his family farm handling livestock waste and applying it to their farm ground for increased crop productivity and soil health, along with practicing no-till farming before no-till farming was cool. With his passion for agriculture this lead him to pursue a degree in Agricultural Engineering at The Ohio State University. This led him to working in the private consulting world for a few years, while working part-time at a wastewater treatment plant. Once gaining his wastewater operations license, he was then recruited into the public wastewater sector. Josh has 10 years of experience working in a wastewater treatment plant, where he has help implement/improve the facilities biosolids programs. He has been in his current position for two years at the City of Columbus Public Utilities. During his first year he was able to help lead the City of Columbus to a status of 100% beneficial reuse of their biosolids and is on track to maintain this status from here on out.

Planning a Biosolids Recycling Program in Bellingham

3:10 | Ian McKelvey, Brown & Caldwell

The City of Bellingham is in the midst of a biosolids study to evaluate replacement of the current incineration process with a biosolids recycling program. Driving the interest in this new approach is the age of the existing incineration facilities, the tightening of air emissions regulations, and the importance to the local community of improving the region's sustainability profile. This presentation will cover the current facilities at the Post Point Wastewater Treatment Plant, discuss the drivers leading the City to initiating a biosolids study, and describe the holistic approach used to identify and evaluate biosolids beneficial use alternatives.



IAN MCKELVEY is a managing engineer with Brown and Caldwell, leading the Solids and Energy group in Seattle. Originally from the Oregon Coast, Ian moved to Seattle in 2006 and has been designing mechanical systems, evaluating resource recovery measures, and developing strategic planning documents ever since. His primary focus has been on promoting sustainable solutions in the wastewater industry, especially through the beneficial use of products traditionally considered waste streams. Ian is a member of the PNCWA Residuals and Biosolids Committee and the Northwest Biosolids Research Committee.

Changing Course: A New Direction for San Francisco Biosolids

3:30 | Ryan Batjiaka, San Francisco Public Utilities Commission

A changing regulatory landscape in California means that many agencies will have to reconsider their biosolids management strategies. This represents an opportunity for the San Francisco Public Utilities Commission to create a more robust biosolids program. Product development, partnerships with academia, and a branding campaign are all part of this effort.

3:50 Biosolids Shark Tank

A panel of seasoned biosolids professionals specializing in land application, product development, customized research projects and program management will offer sage counsel for these start-ups to accelerate their dreams of biosolids greatness.

4:45 BioFest Raffle

5:00 Conference Adjourns

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WHAT TO WEAR

BioFest maintains a relaxed atmosphere. **September** weather in the Pacific Northwest is often warm and sunny, with the occasional cold rainy day. We suggest you pack casual, comfortable, versatile clothing. Don't forget appropriate clothing and shoes for the **Fun Run/Walk** after sessions conclude Monday evening.

VENDOR & AGENCY EXHIBITS

Agency and vendor exhibits will be featured at the Vendor Reception on Sunday and will remain on display throughout the conference. Each vendor who registers will receive one (1) 3' x 6' display table. Set-up for all displays will begin Sunday, September 9 at noon. Vendors are responsible for pins, Velcro, backdrops, and all other related items for their display; these will not be available at the conference.

Northwest Biosolids' **member agencies and subscriber companies** may display products, materials and equipment at a cost of \$100.00 in addition to the cost of the conference registration. **Non-members** will be charged a fee of \$550.00 per space in addition to the conference registration fee. If you are not yet a member and would like to become one and display for \$100.00, submit an application online at www.nwbiosolids.org or contact the Northwest Biosolids office at (206) 477-5565. Exhibit space fee includes one (1) staff member. Additional booth staff can be added for a \$100 fee. Northwest Biosolids' member agencies and subscribers will be given first preference.

*NOTE: This fee is for exhibit space for the duration of the conference only; it **does not include** the conference registration fee or lodging, each of which must be arranged separately.*

Questions about your display? Contact WSU Professional Education at (253) 445-4634.

CONTINUING EDUCATION UNITS

Continuing Education Units (CEUs) will be offered for both wastewater and health certification. If you plan to earn CEU's, collect your CEU card(s) at the registration desk when you arrive. You must attend a full session block (AM or PM) to obtain credit and must get your card stamped at the registration desk following each session. CEUs will be applied for through Washington and Oregon award agencies. Contact Northwest Biosolids at **206-477-5565** or **info@nwbiosolids.org** for more information about academic credit.

REGISTRATION

Register online at **cm.wsu.edu/biosolids18**. Price includes full conference registration fee, social hour on Sunday; breakfast, lunch, social hour, dinner and breaks on Monday; breakfast, lunch and breaks on Tuesday. **Lodging is not included.**

	Early*	Regular
NW Biosolids Member Attendee	\$455.00	(\$525.00 after 8/20)
Non Member Attendee	\$555.00	(\$625.00 after 8/20)
Students/Retired Professionals	\$335.00	(\$400.00 after 8/20)
Speakers	\$335.00	(\$400.00 after 8/20)
Vendors		
NBMA Member Agency/Subscriber		\$100.00
Non-Member Agency/Subscriber		\$550.00

**Early registration ends 8/20.*



SAVE THE DATE

Planning ahead for 2019?

September 8 - 10, 2019

Already charting your schedule for 2019? Add a stop at Semiahmoo in Blaine, Washington for BioFest 2019 — **September 8 - 10, 2019.**

Even better, consider participating as a member of our conference planning team. Contact our Annual Conference Planning Co-chairs (see page 17) to see how you can help build our annual celebration of biosolids management.



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