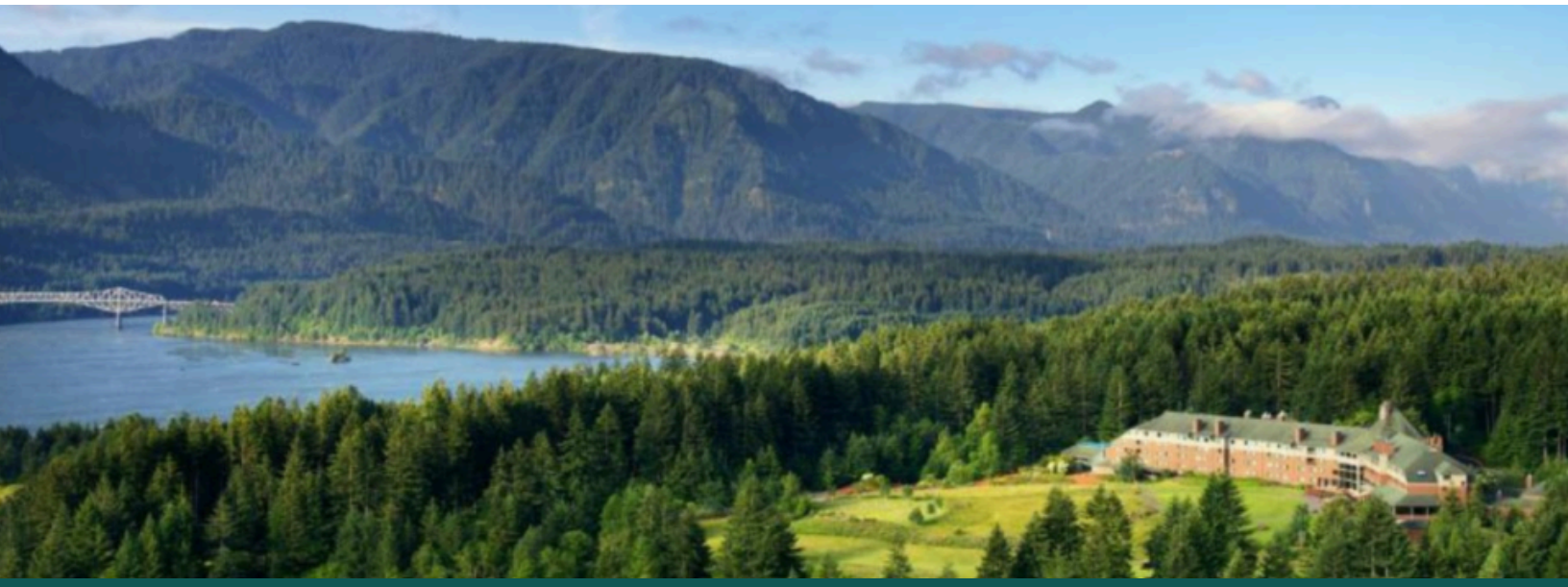
2024

BIOFEST

GIVING CARBON CREDIT



PROGRAM

SEPTEMBER 29TH – OCTOBER 1ST, 2024
SKAMANIA LODGE
STEVENSON, WA

WELCOME TO THE NORTHWEST BIOSOLIDS 36TH BIOFEST.

The NWB Board of Directors is pleased to host our annual event at the Skamania Lodge in Stevenson, Washington. This year's theme of GIVING CARBON CREDIT could not be more appropriate with the current involvement we all have in protecting our environment. The activities we perform in our daily jobs have measurable impacts in the global effort to rectify the effects of climate change.

We invite you to take full advantage of the great presentations on this year's program; the speakers are truly subject-matter-experts in their respective fields. The sessions will bring the latest updates on research into topics that we read about every day, such as PFAS and emerging contaminants, regional regulatory updates, and a workshop on the latest version of the BEAM greenhouse gas emissions model. There will also be case studies that may be relevant to projects you may be contemplating to improve your facility's performance and prepare for future challenges.

Each Biofest brings us together to share experiences, friendships, and meet new participants in our industry. For those that have been to Biofest before, don't just connect withthe people you already know, but look for the people you don't know and make them feel a part of the event. For first-time attendees, join the banter in the groups of people that you want to be a part of. And always look for a NWB Board member to get advice about the extra-activities that we hold at each conference.

The Skamania Lodge is a wonderful venue for us; we haven't been here in many years, so it is great to enjoy this location again. As great as the hotel and conference facilities are, the rural nature of the surroundings should invite you to spend as much time outdoors. As we usually do each year at Biofest, you will see opportunities to share during our evenings together.A special thank you to the Northwest Biosolids Education Committee and the Board of Directors for their time and dedication to planning this year's Biofest!

Wishing you a fantastic conference and look forward to joining you at Biofest 2024!

Sincerely,

James Dunbar, P.E.
Northwest Biosolids President

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NORTHWEST BIOSOLIDS AMBASSADORS

The Board of Directors has created a Northwest Biosolids Ambassadors group to recognize the hard work and dedication to NWB over the years. The Board has identified some integral contributors to our association. Since 2022, we have been honored to have our NWB Ambassadors join us at Biofests, offering invaluable insights and expertise to our guests and our association. Northwest Biosolids thanks our Ambassadors for all they have done and continue to do for our association and the Biosolids Community!

Chuck Henry

Dan Thompson

Maile Lono-Batura

Kyle Dorsey

Steve Thompson

Steve Wilson

AGENDA AT A GLANCE

SUNDAY, SEPT. 29TH

4:30 - 7:30 PM	**2024 Biofest Registration** *Stevenson Front Gallery*
5:00 - 6:00 PM	**Biofest Kickoff & NWB Annual Membership Meeting** *Stevenson C/D*
6:00 PM	**Biofest Welcome - Sponsor/Vendor Social Hour** *Stevenson AB*

MONDAY, SEPT. 30TH

7:00-8:00 AM	**Breakfast | Registration** *Stevenson AB | Front Gallery*
8:00 - 8:20 AM	**Biofest Welcome** Jim Dunbar, JR Inman, and Dr. Sally Brown *Stevenson CD*
8:20 - 8:30 AM	BREAK
8:30-9:30 AM	**Keynote: Carbon - Opportunity Amongst the Chaos** Lise LeBlanc Stevenson CD
9:30-9:40 AM	BREAK
9:40-10:20 AM	**Biofest 2024 Breakout Groups** Moderated by Jim Dunbar
10:20-10:30 AM	BREAK

Section Topic: Carbon Accounting and Sequestration - Stevenson CD
Moderated by MacLeod Pappidas

10:35-10:55 AM	**Soil Carbon 101** Molly Mcilquham
11:00-11:20 AM	**Seeing Carbon from Above: Remote Sensing** David Butman
11:25 - 11:45 AM	**Overview of Metro Vancouver's Biosolids Land Application Carbon Accounting Tool (BLACAT)** Christian Evans & Alvin Kim
11:50 - 12 PM	**Carbon 1040EZ: Getting your files in order!** Andrew Carpenter
12:00 - 1 PM	**LUNCH** Garden Patio

Section Topic: PFAS - Stevenson CD
Moderated by Dr. Sally Brown

1:05 - 1:25 PM	**PFAS Behavior Fate and Transport in Land Applied Biosolids** Peter Loomis
1:30 - 1:50 PM	**Department of Ecology: Biosolids PFAS Efforts and General Permit Update** Emily Kijowski
1:55 - 2:15 PM	**Sources and Fate of PFAS in Biosolids at Clean Water Services** Scott Mansell
2:20 - 2:40 PM	**National PFAS Study** Dr. Ian Pepper
2:40 - 2:55 PM	BREAK

AGENDA AT A GLANCE

Section Topic: Case Studies from around the Region - Stevenson CD
Moderated by Terry Alber

2:55 - 3:15 PM	**The evolution of Compost in the City of Albany** Jeff Olson & Craig Prosser
3:20 - 3:40 PM	**Three Rivers Regional Wastewater Authority** Duane Leaf & Joe Jordan
3:45 - 4:05 PM	**Tacoma's Solid Future** Greg Mockos
4:10 - 4:30 PM	**Choosing a Biosolids Treatment Option and Implementation** Ken Windram
4:35 PM	**ADJOURN** Jim Dunbar
5:00 PM	**Fun Run/Walk**
6:00 PM	**NWB Biosolids Banquet at The Riverview Pavillion**
7:30 PM	**NWB Campfire at The Riverview Pavillion**

TUESDAY, OCT. 1ST

7:30-8:30 AM	**Breakfast** Stevenson AB

Section Topic: Policy and Regulation Updates - Stevenson CD
Moderated by Kasie Auger

8:30 - 8:50 AM	**Diving into Washington State Legislature** Kyle Dorsey
8:55 - 9:15 AM	**California Updates** Gregory Kester
9:20 - 9:40 AM	**Oregon ACWA PFAS Management Strategy for Biosolids** Frank Dick
9:45 - 10:25 AM	**Regulator Panel** Emily Kijowski & Pat Heins & Terry Alber
10:25 - 10:40 AM	BREAK

Section Topic: Research Updates - Stevenson CD
Moderated by JR Inman

10:40 - 11:00 AM	**Biosolids research in Douglas County, WA: soil carbon, PLFA, and updates on grazing trial** Madeline Desjardins
11:05 - 11:25 AM	**Using satellite imagery to determine the impact of biosolids fertilizer on productivity in dryland wheat farms . in Douglas County, WA** Masha Vernik
11:30 - 11:50 AM	**Biosolids' legacy benefits persist even seven years after the application in a dryland wheat-fallow cropping . system** Dr. Surendra Singh
11:50 - 1:15 PM	**LUNCH** Garden Patio

Section Topic: WORKSHOP - Stevenson CD or TOUR - City of Camas
Moderated by Jim Dunbar

1:15 - 2:45 PM	**BEAM me up, Andrew! A workshop applying the BEAM calculator** Andrew Carpenter
2:00 - 3:30 PM	**Tour of City of Camas - Class A Program**
3:00-3:30 PM	**ADJOURN** Jim Dunbar

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

2024 BIOFEST
GIVING CARBON CREDIT

8:00-8:20 AM | NWB WELCOME
Speakers: James Dunbar, P.E. , Dr. Sally Brown, University of Washington and J.R. Inman , Vice President M&J Consulting Group, LLC

JAMES DUNBAR, P.E.

Jim Dunbar is the General Manager for California operations at Lystek International. Jim is a graduate of the University of Notre Dame (BSCE) and St. Xavier University (MBA) and a Professional Engineer with more than 25 years' experience in the management of solid waste and treatment of liquid wastes in the United States and Europe. Jim's involvement with biosolids has led him to develop a northern California regional organics management facility which opened in 2016. This facility also has a successful land application program that utilizes a Class A liquid fertilizer program. Jim has been on the Northwest Biosolids Board of Directors since 2017, and the Board President since 2021.

J.R. INMAN
Vice President M&J Consulting Group, LLC

J.R. worked with Northwest Cascade Inc / FloHawks Plumbing & Septic for over 42+ years as GM / VP for 30 Years.

Also Worked with Liquid Environmental Solution for 2+ Years as Regional VP and GM over all Septic and DrainCleaning in the company.

Last 2+ years is co-owner and VP of M&J Consulting, doing Business Consulting, Sales Training along with other Industry Training Services.

JR has performed work and managed the service plumbing, septic pumping & portable toilet industry for 40 years. JR is licensed in a dozen counties in Washington State as a Pumper, Operation and Maintenance Specialist and Septic Installer. JR has served on boards including National On-Site Wastewater Recycling Association & Northwest Bio-Solids Management Association, Electrical Review committee, and WAC Review / re-write for State of Washington. JR is also Past President of Washington On-Site Sewage Association and is a certified instructor for On-Site Industry.

DR. SALLY BROWN
University of Washington

Sally Brown is a Professor at the University of Washington. Sally Brown received her MS and PhD under Dr. Rufus Chaney in 1996 at the University of Maryland. Her dissertation was on the Long-term effects of biosolids application on agricultural soils. Her work with biosolids started there and hasn't stopped since. She is a Fellow in the Soil Science Society of America and was a two term member of the National Academy of Science Committee on Soil Science. She writes a monthly column for BioCycle Magazine and Northwest Biosolids Resource Library for members only.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

Section Topic: Keynote
(Moderator: Jim Dunbar)

8:30-9:30 AM: KEYNOTE: CARBON - OPPORTUNITY AMONGST THE CHAOS

Speaker: Lise LeBlanc

Description:
The 2023 State of Climate Action report highlights a stark reality: 41 of 42 indicators for climate action are off track for 2030 targets. This reality underscores the urgent need for effective and accountable measures to combat climate change. Amid this chaos, the carbon market, especially the rapidly growing voluntary carbon markets (VCM), is under fire for their lack of oversight, transparency, and integrity, with many VCM projects failing to meet their claims. Farmers, crucial to GHG emission reductions, face significant barriers, including high costs and complex carbon crediting systems. Market concerns over greenwashing, the practice of making misleading claims about the environmental benefits of a product or service, and the validity of credits further complicate the system.

Despite these challenges, there is a unique opportunity for agriculture and industry to collaborate and create mutually beneficial programs that can navigate and reshape the chaotic landscape of carbon markets. LP Consulting's CarbonCropping™ model is designed to facilitate this collaboration by prioritizing emissions reductions and avoidance, providing a reliable and credible framework for carbon credits. This approach enhances the integrity of agricultural carbon credits and empowers both farmers and industry to participate confidently in carbon markets, transforming chaos into opportunity through real and verifiable impact.

Takeaways:
▪Climate Change
▪Carbon Markets
▪Project opportunities between Agriculture and Industry

LISE LEBLANC, LP Consulting Limited, Nova Scotia, Canada
Since founding LP Consulting in 1997, Lise has been a driving force in transforming the relationship between industry and agriculture, focusing on converting waste into beneficial reuse products that improve soil health, sequester carbon, and reduce the GHG impacts of inorganic fertilizers. A recognized leader in soil health, Lise has been instrumental in setting the standards for crop management across Atlantic Canada, ensuring that agricultural practices are sustainable and resilient in the face of climate change. Her innovative industry waste amendment programs have been a game-changer, enabling higher crop yields while simultaneously building long-term climate resilience. These collaborative programs have become benchmarks for other regions looking to adopt more sustainable practices.
Her work has earned her multiple awards, including the Environmental Excellence, Innovation in Waste Reduction Award, and induction into the Mobius Award of Excellence Hall of Fame.
In 2023, Lise's influence reached an international level when she was selected to participate in the Women's Canada Trade Mission to the UK. During this mission, she had the opportunity to meet with leading companies, venture capitalists, world banks, and representatives from the UK stock exchange. Lise used this platform to promote the opportunities within the agricultural and industrial carbon markets. She also highlighted critical gaps in existing systems, drawing attention to the need for more robust frameworks and innovative solutions to fully capitalize on these markets. To address these challenges, LP Consulting is actively pursuing ISO certification for their CarbonCropping model and software program.
Lise serves as the President and Canadian board member of NEBRA, the North Eastern Biosolids and Residuals Association.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

9:40-10:20 AM | BREAKOUT GROUPS
Speaker: James Dunbar, P.E.

JAMES DUNBAR, P.E.

Jim Dunbar is the General Manager for California operations at Lystek International. Jim is a graduate of the University of Notre Dame (BSCE) and St. Xavier University (MBA) and a Professional Engineer with more than 25 years' experience in the management of solid waste and treatment of liquid wastes in the United States and Europe. Jim's involvement with biosolids has led him to develop a northern California regional organics management facility which opened in 2016. This facility also has a successful land application program that utilizes a Class A liquid fertilizer program. Jim has been on the Northwest Biosolids Board of Directors since 2017, and the Board President since 2021.

Section Topic: Carbon Accounting and Sequestration (Moderator: MacLeod Pappidas)

10:30-10:55 AM | SOIL CARBON 101
Speaker: Molly McIlquham, Extension Coordinator, Washington State University

Description:
Carbon is gaining significant attention in agriculture, with terms like "carbon farming," "regenerative agriculture," and "climate-smart practices" highlighting efforts to sequester carbon and mitigate climate change. This movement has spurred new policies, programs, and funding for farmers and advisors, but also some confusion about what's truly achievable. This talk will emphasize the current scientific understanding of soil carbon in agriculture, addressing key questions:

- What is soil carbon?
- How is it accumulated and stored?
- How does agricultural management affect it?
- Why is it challenging to measure?
- Why is it crucial for climate change mitigation and adaptation?

Takeaways:

- The definition of soil carbon
- How soil carbon is accumulated and stored
- Why is soil carbon difficult to measure

MOLLY MCILQUHAM
Extension Coordinator, Washington State University

Molly McIlquham is the Washington Soil Health Initiative Extension Coordinator through Washington State University. Raised on a beef farm in Wisconsin, Molly's passion for sustainable agriculture led her to earn a master's degree in Soil Science from Washington State University, where she conducted a soil health assessment in Washington vineyards. In her current role, she collaborates with diverse stakeholders to promote soil health practices that aim to ensure a safe and nutritious food supply for all.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

11:00-11:20 AM | SEEING CARBON FROM ABOVE: REMOTE SENSING

Speaker: David Butman, University of Washington

Description:
We are in the era of climate change, and everyone is looking for ways to sequester carbon. The science is trying to catch up to the money, but we are not there yet.

Takeaways:
- Methods to measure carbon.
- Concepts of Carbon Accounting related to biosolids and soil.
- Uncertainties in the science of carbon sequestration.

DAVID BUTTMAN
University of Washington
David Butman grew up outside Boston, MA in the city of Gloucester. After completing an economics major in college, he continued to finish a double major with environmental science. Post college, he worked as a fisheries observer for the National Marine Fisheries Service through the North Atlantic, and finally he got too cold in the winter. From there he worked for the State of Massachusetts in the Dept. of Environmental Protection as a watershed analysis. Following his time in Boston, he moved to Woods Hole, MA where he worked as a research assistant at Woodwell Climate Research Center estimating biomass throughout the forests of Siberia from space borne satellites. At this point, he was hooked on satellites and research, returned to the Yale School of Forestry and Environmental Studies, where he completed a dual masters and PhD focusing on carbon cycling in inland water systems. This developed into a Post-Doc with the U.S.G.S and finally led to his position here at the University of Washington where he works to understand the cycling of carbon from land through soils and into aquatic systems. His real life is spent with his wife and two kids frightened by the future but also involved with robotics, hiking, growing things, and generally looking around and realizing what we need to save.

11:25-11:45 AM | OVERVIEW OF METRO VANCOUVER'S BIOSOLIDS LAND APPLICATION CARBON ACCOUNTING TOOL (BLACAT)

Speakers: Christian Evans, Senior Environmental Scientist, Sylvis Environmental and Alvin Kim, Senior Project Engineer and Professional Engineer, Metro Vancouver

Description:
Metro Vancouver and SYLVIS will present a GHG modeling tool for biosolids management which is currently under development. This utility-specific spreadsheet-based model is based on the widely-known Biosolids Emissions Assessment Model (BEAM) but has innovated and developed several aspects and pathways not present in the BEAM.

Takeaways:
- biosolids greenhouse gas modeling
- soil carbon sequestration
- utility-specific greenhouse gas model

CHRISTIAN EVANS
Senior Environmental Scientist, Sylvis Environmental
Christian is a Senior Environmental Scientist and Professional Agrologist at SYLVIS Environmental with over ten years of experience in residuals management, environmental consulting, soil science, and nutrient management. He has worked in a consulting role in a variety of private- and public-sector settings.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

Christian's first impulse when working with spreadsheets is to not run away screaming – and so has become the "Excel Guy" at SYLVIS. As such he was able to fully appreciate the work that SYLVIS, Sally Brown, Andrew Carpenter, and Ned Beecher accomplished on the original BEAM model. By capitalizing on this appreciation, and adding a couple of larger monitors to his desktop, Christian is advancing SYLVIS's GHG modeling of biosolids management with clients who have needs that go beyond the capabilities of the original BEAM.

Christian is working on one such project with Metro Vancouver to develop their Biosolids Land Application Carbon Accounting Tool or BLACAT. The BLACAT is an example of a utility-specific biosolids GHG model that aims to show the positive impacts a well-run biosolids program can have on atmospheric carbon sequestration. Christian has recently presented the story of the BLACAT development with NEBRA and is pleased to be sharing it here today.

ALVIN KIM
Senior Project Engineer and Professional Engineer, Metro Vancouver
Alvin Kim is a Senior Project Engineer and Professional Engineer at Metro Vancouver with over ten years of experience in facility operation, process engineering, and project development. He has worked in an engineering role in oil and gas sector before joining Metro Vancouver in 2021.

Alvin focuses on GHG reduction through technology, as new solutions are needed to meet the GHG targets.

11:50-12:00 PM | CARBON 1040EZ: GETTING YOUR FILES IN ORDER!
Speaker: Andrew Carpenter, Northern Tilth

Description:
The same way the IRS makes taxes a breeze with the 1040 EZ form, we've made carbon accounting easy with the BEAM model. This spreadsheet, developed with Sylvis Environmental takes into account multiple factors to come up with a carbon balance for biosolids end use/ disposal

ANDREW CARPENTER
Northern Tilth
Andrew Carpenter – Andrew Carpenter is a certified soil scientist, certified crop advisor and certified nutrient management planning specialist. Andrew has been recycling organic residuals and developing recycling programs for by-products outside of the traditional recycling markets since 1992. He founded Northern Tilth, LLC an environmental consulting firm focusing on organic waste management and building soil health, in 2003. Andrew is currently a trustee of the Compost Research and Education Foundation (CREF)

Section Topic: PFAS
(Moderator: Dr. Sally Brown)

1:05-1:25 PM | PFAS BEHAVIOR FATE AND TRANSPORT IN LAND APPLIED BIOSOLIDS
Speaker: Peter Loomis, CDM Smith

Description:
The presence and potential release of poly- and perfluoroakyl substances (PFASs) from finished biosolids is a growing environmental concern. In these studies, analysis of the fate and transport of PFAS in the treatment facility and through land applied biosolids is analyzed. Finished biosolids were collected and characterized from seven municipal water resource recovery facilities.Total PFAS concentrations for the 54 analytes quantified in the biosolids ranged from 323 ± 14.1 to 1100 ± 43.4 µg/kg (dry weight basis).

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

In an additional study, PFAS in foam and dewatering filtrate/centrate streams was analyzed to identify the transport through the solids stream. Finally, in situ measurement of PFAS at a historical land application site at varying depths was analyzed to understand long term impacts. For all biosolids, greater than 75% of the PFAS fluorine mass was associated with precursors. Di-substituted polyfluorinated phosphate esters (diPAPs) were the most abundant PFAS identified in the biosolids. The total oxidizable precursor assay on biosolids extracts generally failed to accurately quantify the precursors present. The results highlight the importance of PFAA precursor transformation in biosolids, and their contribution to long term leaching of PFAAs.

Takeaways:

- PFAS occurrence and composition in biosolids at initial processing
- PFAS transformation over time
- Solids land application impacts on PFAS content through the depth profile of land application site

PETER LOOMIS
CDM Smith

Loomis is an environmental engineer with more than 36 years of experience conducting treatment facility planning, design, construction management, and operations. In his role as the CDM Smith Discipline Leader for Biosolids and Bioenergy, he assesses and reviews the biosolids markets throughout the country. Mr. Loomis is an active member of the Water Environment Federation (WEF) and is the author of several publications and presentations on biosolids and bioenergy. He has been researching PFAS impacts on biosolids since 2021 and is applying that research in an island community identifying methods to protect their sole aquifer from treatment plant effluent and biosolids land application.

He holds a B.S. with honors from Brown University and an MBA from George Mason University. He is an avid runner and is currently assistant coaching at a high school in Virginia.

1:30-1:50 PM | DEPARTMENT OF ECOLOGY: BIOSOLIDS PFAS EFFORTS AND GENERAL PERMIT UPDATE

Speaker: Emily Kijowski, Statewide Biosolids Coordinator, Department of Ecology

Description:
This talk will provide an update on several Ecology biosolids program efforts. Including current work on their PFAS sampling study, as well as an update on the state of the General Permit for Biosolids Management following appeal and PCHB decision.

Takeaways:

- Ecology's efforts in their PFAS sampling study,
- Updates on the general permit appeal and PCHB decision and path forward

EMILY KIJOWSKI
Statewide Biosolids Coordinator, Department of Ecology

Emily Kijowski is the Statewide Biosolids Coordinator for Washington State Department of Ecology. She has 11 years of experience in the solid waste and recycling field. In 2019 she began working at the Department of Ecology to manage the process to renew the Statewide General Permit for Biosolids Management, including its reorganization. After the permit issuance she transitioned into the Statewide Coordinator role to oversee implementation of the permit and program statewide. During her time with Ecology she has prioritized consistent program implementation across the state and keeping informed about contaminants of concern. Most recently the focus has been on the presence of PFAS in biosolids as a result of their use in manufacturing of industrial and household consumer products upstream of wastewater treatment plants.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

1:55-2:15 PM | SOURCES AND FATE OF PFAS IN BIOSOLIDS AT CLEAN WATER SERVICES

Speaker: Scott Mansell, Principal Engineer – Research, Clean Water Services

Description:
Clean Water Services has been studying PFAS since 2019. In this talk, we will discuss how we identified the main sources of PFAS to the WRRFs and what actions we are taking to mitigate them. This will include a mass balance of different sectors (domestic, industrial, commercial) as well as loading from individual industries. Next we will look at PFAS concentrations in biosolids and the soils where they have been land applied for decades in Eastern Oregon and the Willamette Valley. Finally, these findings will be compared with recent biosolids data from WRRFs around Oregon to identify the variability and effects of different sources.

Takeaways:
- PFAS in biosolids and soil
- Tracking down sources of PFAS to WRRFs
- Addressing sources of PFAS

SCOTT MANSELL
Principal Engineer – Research, Clean Water Services
Scott is a Principal Engineer in the Research and Innovation Program at Clean Water Services in Hillsboro, Oregon. Scott's career in research and engineering has covered an exceptionally wide range of subject areas within the One Water field including wastewater, stormwater, reuse, soils, surface waters, and the watershed. He currently leads research efforts at Clean Water Services for the areas of advanced sensing, PFAS and emerging contaminants, advanced hydraulic and water quality modeling, and data analysis/machine learning and is an active participant in projects in many other areas including stormwater management, climate change, and integrated planning. He has collaborated on many research projects and studies with universities, consultants, and other utilities around the country. Scott received his BS in Civil and Environmental Engineering from the University of Utah in 2006 and worked in consulting for 2 years before starting grad school. After earning a PhD in Environmental Engineering from UC Berkeley in 2012, Scott worked in consulting for 5 more years before coming to Clean Water Services in 2017. He is a registered engineer in the State of Oregon and serves as the Pacific Northwest representative for the WateReuse Association Research Committee.

2:20-2:40 PM | NATIONAL PFAS STUDY

Speaker: Dr. Ian Pepper, University of Arizona

Description:
National collaborative study on incidence and mobility of biosolid derived PFAS within long term land application sites across the US.

Takeaway:
-Incidence of PFAS analytes generally low from land application of municipal Biosolids
-Rapid attenuation of PFAS with depth from surface soil
-Potential risk of groundwater contamination can be evaluated via a model allowing calculation of soil screening levels

DR. IAN PEPPER
University of Arizona
Dr. Pepper is a Regents Professor at the University of Arizona, where he is the Director of the Water and Energy Sustainable Technology Center. He is currently conducting a variety of research studies including wastewater- based epidemiology monitoring of SARS- CoV-2 and issues related to the land application of biosolids.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

Section Topic: CASE STUDIES FROM AROUND THE REGION
(Moderator: Terry Alber)

2:55-3:15 PM | THE EVOLUTION OF COMPOST IN THE CITY OF ALBANY

Speakers: Jeff Olson, City of Albany and Craig Prosser, City of Albany

Description:
We will be discussing the history of biosolids in the City of Albany, the decision-making process, how we chose Engineered Compost Systems (ECS), and the facility construction phase.
We will also provide an update on Compost project and future expansion planning.

Takeaway:
- History of biosolids in City of Albany
- Decision making process
- Construction
- Compost project update
- Future expansion planning

JEFF OLSON
City of Albany

Employed with the City of Albany Water Reclamation Facility since 2009

CRAIG PROSSER
City of Albany Wastewater Superintendent
Undergrad studies at Oregon State University
AAS Water, Environment, and Technology Linn Benton Community College
Oregon DEQ Grade IV Wastewater Treatment Certification #12267
Oregon DEQ Grade III Wastewater Collection Certification #13032
Craig has 24 years' experience in the Wastewater field including Poplar plantation management, Recycle water irrigation, Class A and B biosolids land application, Wastewater Consultant and Project management where he oversaw City of Albany Class A Exceptional Quality Compost facility construction and implementation

3:20-3:40 PM | THREE RIVERS REGIONAL WASTEWATER AUTHORITY (TRRWA)

Speakers: Duane Leaf, General Manager, Three Rivers Regional Wastewater Authority (TRRWA) and Joe Jordan, Lab & Pretreatment Manager, Three Rivers Regional Wastewater Authority (TRRWA)

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

DUANE LEAF
General Manager, Three Rivers Regional Wastewater Authority

Duane Leaf is the General Manager of the Three Rivers Regional Wastewater Authority (TRRWA).The TRRWA is a 26 MGD conventional activated sludge facility which serves the Cities of Kelso, Longview, portions of Cowlitz County, and the Beacon Hill Water and Sewer District. Duane has held this position since 2004. Prior to this, he was the Utilities Director in Appleton, WI from 1994 – 2004. Before that he was the Facilities Director for the Glenbard Wastewater Authority in Glen Ellyn, IL from 1985 - 1994. He has been in municipal water and wastewater treatment since he graduated from college in 1979.

Duane has B.S. Degrees from Eastern Illinois University in Zoology and Environmental Biology. He holds a Class IV Washington Wastewater License and previously held Illinois and Wisconsin Water and Wastewater Licenses.

His experience with management includes rate setting, capital planning, project management, personnel management, risk management, and overseeing the operation of large water and wastewater facilities. TRRWA was reorganized as a Joint Municipal Utility Services Agency in 2016, which means it essentially functions as a city.

JOE JORDAN
Lab & Pretreatment Manager, Three Rivers Regional Wastewater Authority

Duane Leaf is the General Manager of the Three Rivers Regional Wastewater Authority (TRRWA).The TRRWA is a 26 MGD conventional activated sludge facility which serves the Cities of Kelso, Longview, portions of Cowlitz County, and the Beacon Hill Water and Sewer District. Duane has held this position since 2004. Prior to this, he was the Utilities Director in Appleton, WI from 1994 – 2004. Before that he was the Facilities Director for the Glenbard Wastewater Authority in Glen Ellyn, IL from 1985 - 1994. He has been in municipal water and wastewater treatment since he graduated from college in 1979.

Duane has B.S. Degrees from Eastern Illinois University in Zoology and Environmental Biology. He holds a Class IV Washington Wastewater License and previously held Illinois and Wisconsin Water and Wastewater Licenses.

His experience with management includes rate setting, capital planning, project management, personnel management, risk management, and overseeing the operation of large water and wastewater facilities. TRRWA was reorganized as a Joint Municipal Utility Services Agency in 2016, which means it essentially functions as a city.

3:45-4:05 PM | TACOMA'S SOLID FUTURE
Speaker: Greg Mockos, Solids and Energy Practice Lead, Brown and Caldwell

Description:
A 2020 evaluation for the City of Tacoma found that digestion capacity at the Central Treatment Plant was limited given the City's preferred redundancy condition and the State of Washington's Criteria of Sewage Works Design guidance. This prompted the City to evaluate the components of the solids handling system at the CTP as part of a Solids Handling Process Evaluation, the goal of which was to determine the most efficient way to increase the capacity of the digestion process through modifications to various solids handling components. Throughout the course of the Solids Handling Process Evaluation, the City noted the need for comprehensive and significant upgrades beyond what was originally identified in their solids handling system. In 2023, the City decided to advance an alternative that relocates the current TAGRO facility offsite and constructs a new solids management complex in its place. An Implementation Plan will provide a roadmap for the City to be able to deliver the estimated $350M program over the next two decades. The presentation will discuss the City's solids system capacity demands and outline how the City reached the selected solids handling alternative, as well as the Implementation Plan and considerations given to moving the nationally-recognized TAGRO program to a new location.

2024 BIOFEST AGENDA

MONDAY, SEPT. 30TH

Takeaways:
- Multi-Criteria Decision Analysis
- Relocation of Tagro Operations
- Solids Program Implementation

GREG MOCKOS
Solids and Energy Practice Lead, Brown and Caldwell
Duane Leaf is the General Manager of the Three Rivers Regional Wastewater Authority (TRRWA).The TRRWA is a 26 MGD conventional activated sludge facility which serves the Cities of Kelso, Longview, portions of Cowlitz County, and the Beacon Hill Water and Sewer District. Duane has held this position since 2004. Prior to this, he was the Utilities Director in Appleton, WI from 1994 – 2004. Before that he was the Facilities Director for the Glenbard Wastewater Authority in Glen Ellyn, IL from 1985 - 1994. He has been in municipal water and wastewater treatment since he graduated from college in 1979.

Duane has B.S. Degrees from Eastern Illinois University in Zoology and Environmental Biology. He holds a Class IV Washington Wastewater License and previously held Illinois and Wisconsin Water and Wastewater Licenses.

His experience with management includes rate setting, capital planning, project management, personnel management, risk management, and overseeing the operation of large water and wastewater facilities. TRRWA was reorganized as a Joint Municipal Utility Services Agency in 2016, which means it essentially functions as a city.

4:10-4:30 PM | CHOOSING A BIOSOLIDS TREATMENT OPTION AND IMPLEMENTATION
Speaker: Ken Windram, Hayden Area Regional Sewer Board

Description:
The Hayden Area Regional Sewer Board (HARSB) installed a tertiary treatment system to meet the new water quality standards for the Spokane River. Tertiary treatment will increase the amount of biosolids produced. The existing biosolids handling consisted of a Waste Activated Sludge holding tank and Screw Press dewatering. HARSB needed to select a biosolids treatment process to improve the options for biosolids disposal. This presentation will provide information on how the HARSB evaluated the biosolids treatment options for capital costs and 20-year operations and maintenance costs. The final selected biosolids handling process was a Solar Dryer using HUBER SRT system. The HARSB HUBER SRT solar dryer is the first in the Northwest. The solar dryer has unique design features for the north Idaho climate, with insulated walls and ceilings.

Takeaway:
- Evaluation Biosolids Treatment Options and their impacts on the treatment plant.
- Biosolids Solar Dryer Design and Construction
- Biosolids Solar Dryer Operation, Final Biosolids Product and Costs

KEN WINDRAM
Hayden Area Regional Sewer Board
45+ years' experience in wastewater operations & management working at over 50 wastewater treatment facilities from 50,000 GPD to 450 MGD per day capacity. Wastewater licenses: New York Grade 2, Massachusetts Grade 7, Indiana Grade 4, Hawaii Grade 4, Washington Grade 4, Idaho Grade 4. I have worked for Envirotech Operating Service, Metcalf & Eddy, USFilter and Veolia Water. I was the project manager for the design, build, own and operate 13 MGD Honouliuli Water Recycling Facility. My current position is administrator, responsible charge operator and tertiary treatment & biosolids project construction manager.

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

Section Topic: POLICY AND REGULATION UPDATES
(Moderator: Kasie Auger)

8:30-8:50 AM | DIVING INTO WASHINGTON STATE LEGISLATURE

Speaker: Kyle Dorsey, Clean Water Coalition

Description:
After two years of tracking legislative activity for The Coalition for Clean Water, I am happy to report that it is not quite as traumatically tedious, tiresome, dull, boring, and monotonous as I expected. I will share what I have learned about tracking bills and getting help from legislative staff, and highlight some of the valuable associated resources available on the Legislature's website. Yes, you too can have fun with the Washington State Legislature!

Takeaways:
▪Take the plunge. You have to dive in and explore the Legislature's web resources and the Legislative process. It isn't nearly as baffling as you might think.
▪Finding bills of interest and creating a custom list that you can track during the session.
▪Resources for commenting, testifying, and viewing hearings.
▪Other valuable resources on the Legislative web.
▪How to get help when you need it.

KYLE DORSEY
Clean Water Coalition
Kyle Dorsey is the Executive Director at the Coalition for Clean Water, a nonprofit representing local governments focusing on wastewater, biosolids, and stormwater issues. Kyle came to the Coalition after more than thirty years with the Washington State Department of Ecology and has also worked in the private sector as the environmental services manager for a small business. Kyle has experience in legislative analysis, rulemaking, and permitting. While at Ecology he served as the state biosolids program coordinator as well as a regional program coordinator, is the original author of the state biosolids program rules, and oversaw development of the state biosolids program permit system. Kyle was an active participant in national program development and traces his biosolids roots back to before the federal rules in 40 CFR Part 503. He is a 1981 graduate of Washington State University. Kyle is an umpire and volleyball referee and likes to fish, work with wood, and spend time with his children and grandchildren.

8:55-9:15 AM | CALIFORNIA UPDATES

Speaker: Gregory Kester, CASA

Description:
California has adopted some of the most aggressive legislative initiatives to mitigate climate change, in the nation. These include organic diversion requirements from landfills, reducing methane emissions, emitting 90% less carbon dioxide equivalent emissions than 1990, achieving energy neutrality, lowering the carbon intensify of transportation fuel, and electrifying the entire transportation sector. The wastewater and biosolids sectors can play key roles in helping to achieve the legislative mandates. This presentation will outline key opportunities and challenges in doing so
Takeaway:

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

GREGORY KESTER
CASA
Greg serves as both the technical and programmatic contact for CASA members and conduit for emerging issues on the state and federal levels on all biosolids, renewable energy, and related issues. He works closely with local, state and federal authorities as well as the private sector on biosolids management, climate change mitigation, and energy optimization. Prior to joining CASA in June 2007, he served as the state biosolids coordinator for the Wisconsin Department of Natural Resources, where he represented all states in the nation, by their election, to the USEPA on all biosolids issues. He has a BS in Civil and Environmental Engineering from the University of Wisconsin and is a Registered Professional Engineer.

9:20-9:40 AM | OREGON ACWA PFAS MANAGEMENT STRATEGY FOR BIOSOLIDS

Speaker: Frank Dick, City of Vancouver

Description:
ACWA's PFAS Workgroup was formed in 2019 and developed a white paper and published in 2022 "Managing PFAS in Oregon - A Clean Water Agency Perspective". The presentation with focus on ACWA's strategies for biosolids and provide details on a proposed project with primary supporters ACWA, ODEQ, and OSU, and further support from Oregon legislators and partner utilities and agricultural operations.

Takeaways:
- Importance of source control / upstream to limit PFAS from entering wastewater treatment facilities and biosolids
- More research is needed on fate and transport of PFAS in biosolids land application programs
- Engagement with diverse set of stakeholders is key to retaining trust and to support science based activities

FRANK DICK
City of Vancouver
Frank oversees sewer and wastewater engineering functions for the City of Vancouver. 17 years with Vancouver in wastewater engineering.

- Initiated many energy efficiency projects and programs
- Leader nationally and internationally representing wastewater on wipes and non-flushables
- NACWA Co-Chair of Pollution Prevention and Pretreatment Committee
- Oregon ACWA – Biosolids and Recycled Water Committee Chair and Board Member
- Numerous presentations at PNCWA, short school and other workshops
- 2023 TEDx Talk Engage a Community's Poo-Pride in Contributing to Climate Action | Frank Dick | TEDxLacamas Lake (youtube.com)

Prior to his position at Vancouver, Frank spent 14 years at semiconductor and electronics manufacturing facilities in the Portland-Vancouver area, in consultant and staff positions for facilities engineering and environmental compliance.

Frank earned is BS in Chemical Engineering from Washington State University in Pullman.

9:45-10:25 AM | REGULATOR PANEL

Speakers: Emily Kijowski, Statewide Biosolids Coordinator, Department of Ecology, Pat Heins, State Coordinator for Biosolids and Water Reuse, Oregon DEQ, Terry Alber, IPDES Biosolids / Pretreatment Coordinator, Idaho DEQ

Description:
State representatives will discuss their biosolids programs, the regulations that govern management practices, any changes coming up, and answer questions from participants.

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

Takeaways:
State regulations, policies and potential changes in program implementation.

EMILY KIJOWSKI
Statewide Biosolids Coordinator, Department of Ecology
Emily Kijowski is the Statewide Biosolids Coordinator for Washington State Department of Ecology. She has 11 years of experience in the solid waste and recycling field. In 2019 she began working at the Department of Ecology to manage the process to renew the Statewide General Permit for Biosolids Management, including its reorganization. After the permit issuance she transitioned into the Statewide Coordinator role to oversee implementation of the permit and program statewide. During her time with Ecology she has prioritized consistent program implementation across the state and keeping informed about contaminants of concern. Most recently the focus has been on the presence of PFAS in biosolids as a result of their use in manufacturing of industrial and household consumer products upstream of wastewater treatment plants.

PAT HEINS
State Coordinator for Biosolids and Water Reuse, Oregon DEQ
Pat Heins has over 25 years of experience working in environmental compliance. He started as an analyst for an environmental laboratory and an assistant environmental compliance manager for a manufacturing facility, before working as a consultant for 14 years. Pat began working for Oregon Department of Environmental Quality in 2014 in the NW region and is now working in DEQ's headquarters as the state biosolids and recycled water program coordinator and serves as a permit writer for individual and statewide water quality permits.

TERRY ALBER
IPDES Biosolids / Pretreatment Coordinator, Idaho DEQ
Terry Alber has spent over two decades involved in water quality, including operations, inspections, data and sample collection and analysis, and regulatory analysis, interpretation, compliance, and enforcement. He started his fifteen years with the City of Boise as an Environmental Technician and rose through Senior Environmental Specialist to the Pretreatment Program Coordinator position. In the last four and a half years, he has tackled the challenge of book-ending the wastewater treatment process as DEQ's Biosolids and Pretreatment Coordinator, providing compliance assistance and guidance to Idaho's POTWs. In Idaho, if you have a Biosolids or Pretreatment question, Terry will have an answer (even if he has to make one up).

Section Topic: RESEARCH UPDATES
(Moderator: JR Inman)

10:40-11:00 AM | Biosolids research in Douglas County, WA: soil carbon, PLFA, and updates on grazing trial
Speaker: Madeline Pierce Desjardins, Washington State University, Graduate Student

Land application of biosolids may increase soil carbon (C) stocks by providing an additional outside source of C to soils and by increasing plant productivity through improvements in nutrient and water availability. Biosolids may also increase microbial activity, which could increase processing of plant residues into particulate (POC) and mineral-associated organic C (MAOC) pools.

We will discuss how biosolids are influencing C stocks and pools (free POC, occluded POC, MAOC, and dissolved organic C) at a 20+ year biosolids trial in Douglas County, Washington. We will share C stock data and preliminary results from ongoing POC and MAOC fractionation of soils.
We will also share results of phospholipid fatty acid (PLFA) analysis performed yearly on soils from

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

Douglas County biosolids research sites. PLFAs are found in cell membranes, and they can help researchers and farmers get a snapshot of the soil microbial community at a given time, as they are found in the cell membranes of living organisms and degrade quickly after organisms die.

We will finish up our presentation with updates on other biosolids research taking place in Douglas County at the long-term trial and another trial integrating biosolids applications with additional soil health management practices.

Takeaways:

- Background on how biosolids influence soil carbon stocks
- Explanation of the different carbon pools, and their potential residence times, with preliminary results from long-term biosolids trial.
- Explanation of PLFA, and how biosolids applications have impacted PLFA at a long-term biosolids trial in Douglas County, WA.
- Updates on biosolids and grazing trial in Douglas County, WA.

MADELINE PIERCE
Washington State University, Graduate Student
Madeline is a PhD candidate studying soil science at Washington State University in Dr. Deirdre Griffin LaHue's Soil Health Lab. Madeline's research focuses on the impacts of long-term biosolids applications on soil health and sustainable crop productivity in semi-arid dryland grain systems.

11:05-11:25 AM | USING SATELLITE IMAGERY TO DETERMINE THE IMPACT OF BIOSOLIDS FERTILIZER ON PRODUCTIVITY IN DRYLAND WHEAT FARMS IN DOUGLAS COUNTY, WA

Speaker: Masha Vernik, Graduate Student, University of Washington

Description:
For just over three decades, the King County Biosolids Program has been selling treated King County biosolids to farms in Douglas County, Washington to be used as fertilizer. While the effectiveness of biosolid fertilizer has been supported through agronomic investigations on research plots, it has not been assessed on production farms. This study uses satellite imagery to investigate differences in productivity between dryland wheat production farms that applied biosolids and those that applied conventional fertilizer among four paired fields in Douglas County, WA, where productivity was estimated using the Normalized Difference Vegetative Index (NDVI). This study finds that there was a significant increase in estimated wheat productivity among fields where biosolid fertilizer was used, as compared to those where conventional fertilizer was used.

Takeaways:

- While agronomic research shows that biosolids fertilizer boosts productivity on research farm plots, it has not yet been measured on production farms.
- We used satellite imagery to compare estimated productivity on dryland wheat farms in fields where biosolids were applied compared to those with conventional fertilizer.
- This study finds that there was a significant increase in the estimated wheat productivity among fields where biosolids were used, as compared to those where conventional fertilizer was used.

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

MASHA VERNIK
Graduate Student, University of Washington
Masha Vernik is a graduate student at the University of Washington's School of Environmental and Forest Sciences. She studies how local farmers are adapting to climate change and is especially interested in how seed diversity can contribute to climate resilience. She employs qualitative and quantitative methods that include conducting interviews, evaluating survey data, and analyzing satellite imagery. Her learning extends beyond the classroom and into the field as an avid gardener and part-time farmworker. She graduated from Boston University with a B.A. in International Relations.

11:30-11:50 AM | BIOSOLIDS' LEGACY BENEFITS PERSIST EVEN SEVEN YEARS AFTER THE APPLICATION IN A DRYLAND WHEAT-FALLOW CROPPING SYSTEM

Speaker: Surendra Singh, Assistant Professor and Director Lind Dryland Research Station, WSU Lind Dryland Research Station

Description:
Although the direct influence of biosolids has been extensively studied, research-based information on persistence and long-term residual or 'legacy' effects of biosolids applications have only rarely been reported. Therefore, this study was conducted to understand the longevity of the impacts of biosolids seven years after the application. We leveraged the existing biosolids study at the Washington State University's Lind Dryland Research Station under the 2-year wheat-fallow cropping system. The study included tillage (tandem disk vs undercutter tillage) as the main-plot factor and fertilizer source (biosolids vs synthetic N+S) as the subplot factor in a split-block experimental design. Biosolids were applied at the rate of 6.5 mt/ha (on dry weight basis to meet requirements for two wheat crops) in 2012 and 2016. Soil samples were collected from the 0-10 cm depth in 2023 and analyzed for an array of soil properties. Results showed that seven years after the last application of biosolids, compared to the synthetic fertilizer plots, the biosolids plots had increased total C, total N, extractable P, S, Zn, Fe, Mn, and Cu and decreased soil pH, Mg, and Ca. Grain protein, soil EC, NO3-N, NH4-N, Na, and B were not affected by fertilizer source. Conservation undercutter tillage showed increased soil K, Mg, Organic Matter, Zn, total N, and total C compared to traditional disk tillage. In addition, biosolids legacy showed 42% higher grain yield, 47% greater straw production, and increases in most grain yield components but 8% lower 1000-grain weight compared to synthetic fertilizer treatments. Overall, biosolids showed improved nutrient availability, wheat grain yield, and grain yield components in a dryland region seven years after the last application. Our data show that periodic application of biosolids improves soil health and increases grain yield in dryland wheat systems.

Takeaways:
- This study reports on the continued legacy effects of biosolids seven years after the last application on soil and crop parameters under a dryland wheat-fallow cropping system in the low precipitation zone of the iPNW.
- The presence of higher amounts of soil macro- and micro-nutrients clearly indicated the potential of biosolids as a long-term and low-cost source of key nutrients.
- Biosolids legacy showed increased grain yields, straw production, and spike density, but with reduced 1000-grain weight and soil pH.

2024 BIOFEST AGENDA

TUESDAY, OCT. 1ST

SURENDRA SINGH
Assistant Professor and Director at the Lind Dryland Research Station at Washington State University
Surendra Singh is an Assistant Professor and Director at the Lind Dryland Research Station at Washington State University. His research and extension focus encompasses diverse cropping systems, soil moisture storage, organic amendments, long-term research, soil erosion control, soil health, alternative crops, crop rotations, soil acidity, nutrient management, carbon sequestration, grain quality, and farm profitability for dryland farming systems. Before joining WSU, Surendra worked as a Postdoctoral Scholar at the Oregon State University's Columbia Basin Agricultural Research Center at Pendleton, OR. His research focused on designing alternative sustainable cropping systems, nutrient dynamics, soil health, farm profitability, carbon footprints, grain quality, and organic amendments for climate-resilient dryland farming systems in the Pacific Northwest region. Surendra received his Ph.D. in Soil Sciences from the University of Tennessee, Knoxville, where his dissertation focused on soil health assessment for the agroecosystems of west Tennessee. Surendra is originally from India and completed his BS in agriculture from Punjab Agricultural University, India.

Section Topic: WORKSHOP OR TOUR

1:15-2:45 PM | BEAM me up, Andrew! A workshop applying the BEAM calculator
Speaker: Andrew Carpenter, Northern Tilth

Description:
This workshop will be offer a semi-deep dive in the the (Biosolids Emissions Assessment Model) spreadsheet tool. The tool has been widely used to model greenhouse gas emissions as they relate to the management of biosolids. The tool has been updated several times since its development in 2009 as part of a Sylvis project for the Canadian Council of the Ministers of the Environment. It has proven a useful tool for comparative planning of potential future changes in biosolids management for wastewater utilities.

Takeaways:
- greenhouse gases
- biosolids management
- carbon cycling
- uncertainties in GHG modeling

ANDREW CARPENTER
Northern Tilth
Andrew Carpenter – Andrew Carpenter is a certified soil scientist, certified crop advisor and certified nutrient management planning specialist. Andrew has been recycling organic residuals and developing recycling programs for by-products outside of the traditional recycling markets since 1992. He founded Northern Tilth, LLC an environmental consulting firm focusing on organic waste management and building soil health, in 2003. Andrew is currently a trustee of the Compost Research and Education Foundation (CREF)

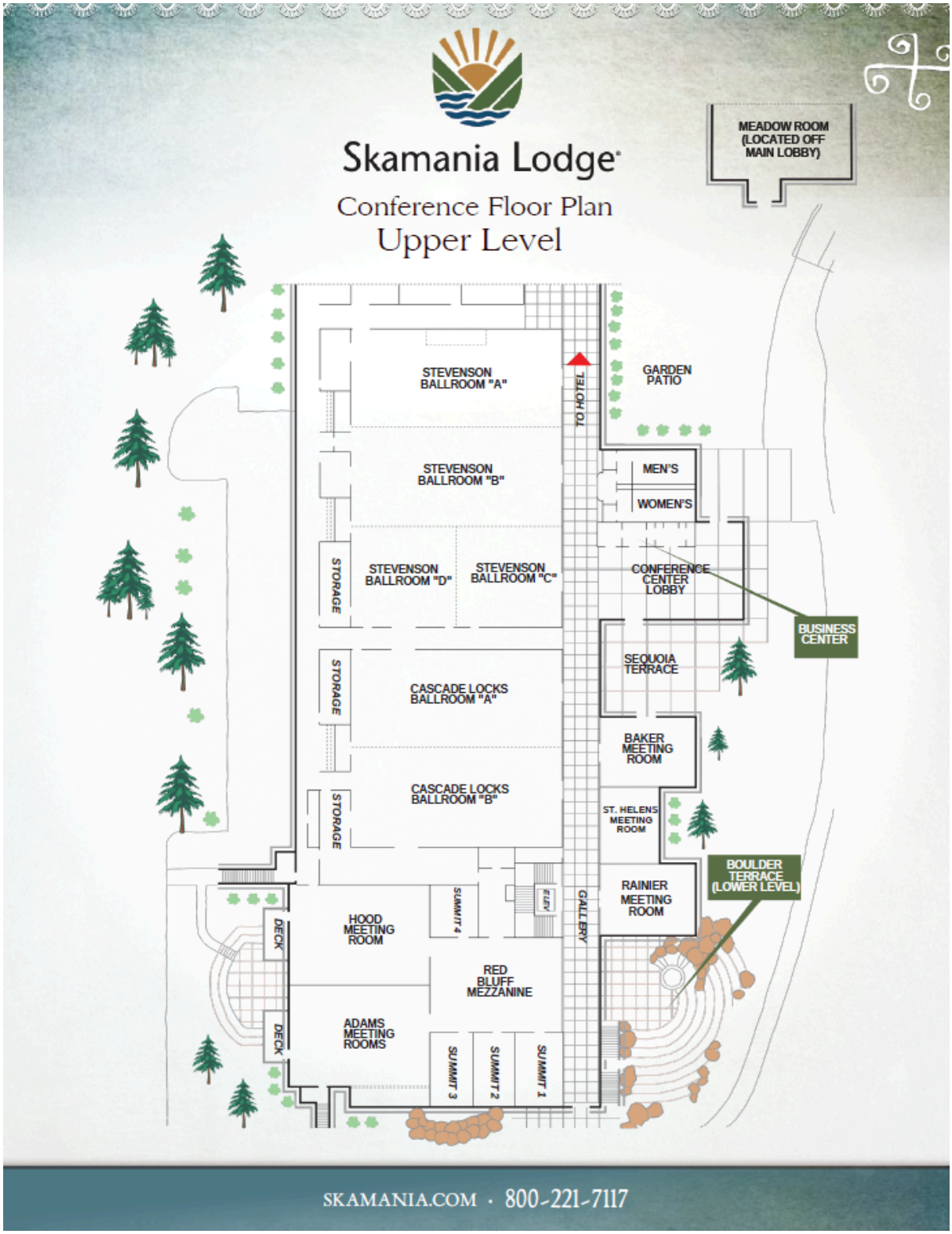
2:00-3:30 PM | CITY OF CAMAS TOUR - CLASS A PROGRAM
Limited space, must have pre-registered during conference registration.

CONTINUING EDUCATION

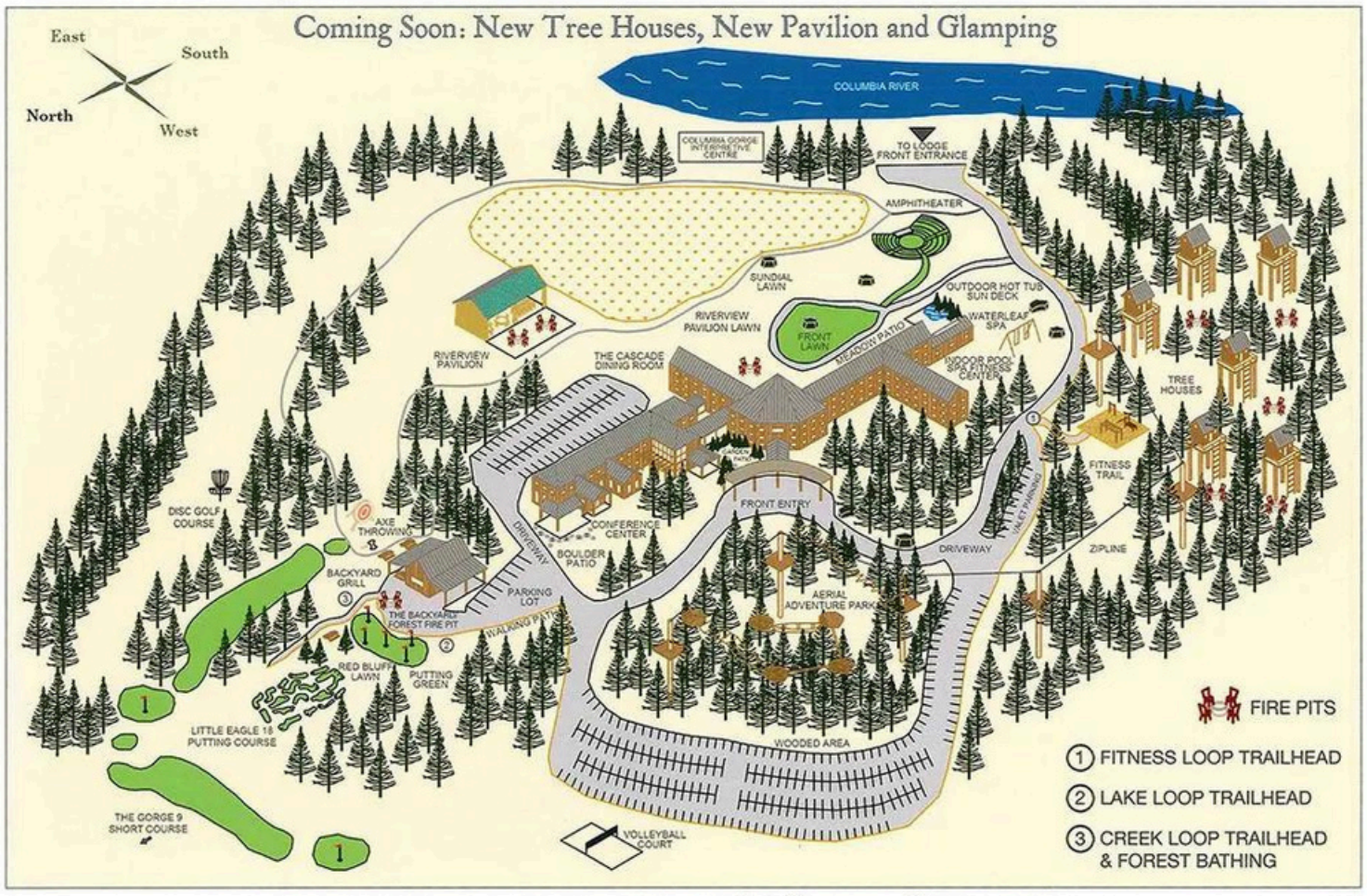
CEUS & Certificate of Completion will be provided from Northwest Biosolids after Biofest, upon submittal of this form HERE:

SCAN TO SIGN -IN

SKAMANIA MAP



SKAMANIA MAP



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BIOFEST2025

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NORTHWEST BIOSOLIDS

MISSION STATEMENT

To advance environmental sustainability through the beneficial use of biosolids.
We strive to:
• Be the Pacific Northwest regional voice for biosolids
• Share historic and current knowledge
• Advance the knowledge of biosolids recycling through collaboration with research institutions
• Increase the use of biosolids products and broaden beneficial use markets by understanding community needs

NWB MEMBERSHIP

Northwest Biosolids exists because of you, our members. We provide our member utilities and companies with essential biosolids management information, resources, and opportunities.

- Find answers to your technical questions.
- Develop and improve your own biosolids management program.
- Keep current on the latest biosolids policy and technology.

For more information about becoming a member, please check out our website at nwbiosolids.org or email info@nwbiosolids.org.

WANT TO GET INVOLVED?

Northwest Biosolids is looking for committee volunteers! This is a great opportunity to get involved. Whether you have 30 minutes to spare a month, or a couple hours, we have opportunities for you!
Here is a list of the Northwest Biosolids Committees:

- Education
- Membership
- Outreach
- Research

Please speak with a Northwest Board Member at Biofest or email info@nwbiosolids.org for more information about how to get involved with a committee.