

Nutrient Symposium 2015

San Jose, California, USA
26 – 28 July 2015

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OPENING GENERAL SESSION

Opening General Session
Monday, July 27, 2015
8:30am – 12:00pm

Room: Oak Ballroom
PDHS: 2.4

- | | |
|----------------|--|
| 8:30am | Welcome and Introduction
<i>Ed McCormick, WEF President</i> |
| 8:50am | Nutrient Treatment as a part of Urban Wastewater Resource Recovery Facilities in 25 year
<i>Craig Criddle, Stanford University</i> |
| 9:10am | Pragmatic Utility Sustainability through Rapid Implementation of Emerging Technology
<i>Charles Bott, HRSD</i> |
| 10:00am | Networking Break |
| 10:45am | The San Francisco Bay Area Nutrient Watershed Permit: Balancing Innovative Technology Uncertainty and Environmental Prediction Uncertainty
<i>Michael Connor, East Bay Dischargers Authority</i> |
| 11:05am | The San Francisco Bay Area Nutrient Watershed Permit: A Streamlined Approach to Identify Cost Effective Strategies for Nutrient Load Reductions
<i>Michael Falk, HDR Engineering Inc</i> |
| 11:25am | Applying 30 years of Knowledge from the Chesapeake Bay Program to Nutrient Removal Upgrades in the San Francisco Bay Area
<i>Thor Young, GHD</i> |
| 11:45am | Questions and Discussion |
| 12:00pm | Session Adjourns |

TECHNICAL PROGRAM

Session 1: Nutrient Removal and Recovery

Monday, July 27, 2015

1:30pm – 5:00pm

Room: Oak Ballroom

PDHS: 2.75

Moderator: Jim McQuarrie, *Metro Water Reclamation District, Denver CO*

1A 1:30pm

Mainstream Nitrite-Shunt with Biological Phosphorus Removal Using a Low Dissolved Oxygen Aeration Control Strategy

Jose Jimenez, Pusker Regmi, *Brown And Caldwell*; George Wise, *City of St. Petersburg FL*.

1B 1:50pm

Demonstration of a Novel Separate Centrate Deammonification Process at the 26th Ward Wastewater Treatment Plant

Sarah Galst, Wendell Khunjar, *Hazen and Sawyer, P.C.*; Robert Sharp, *Manhattan College*; Kathleen O'Connor, *NYSERDA*; Allen Deur, *NYCDEP*; Paul Pitt, *Hazen and Sawyer, P.C.*

1C 2:10pm

Recommendations and Lessons Learned from the Startup of the First Two Full-Scale Sidestream Deammonification Processes in North America: DEMON and ANITA Mox

Stephanie Klaus, *Virginia Tech*; Andrea Nifong, *World Water Works, Inc.*; Andy Nelson, Bob Rutherford, Rick Baumler, Charles Bott, *Hampton Roads Sanitation District*

2:30pm

Facilitated Discussion

3:00pm

Networking Break

1D 3:45pm

Reclaiming Ammonia from Anaerobic Digestate as a Profitable Product

Dennis Burke, *Environmental Energy & Engineering Co*

1E 4:05pm

Implementing EBPR at an Existing WRRF: Operational Adjustments to Low pH, Alkalinity Limitations, and Future Biosolids Resource Recovery

Leon Downing, *CH2M*; Mike Young, Bill Tatum, Trinity Hill, *River Authority of Texas*

TB1 4:25pm

Generating Class A Struvite at the West Boise WWTP

Jordi Figueras, *Pharmer Engineering*

4:30pm

Facilitated Discussion

5:00pm

Session Adjourns

TECHNICAL PROGRAM

Session 2: BNR Troubleshooting and Optimization

Monday, July 27, 2015

1:30pm – 5:00pm

Moderator: Joe Husband, *Arcadis*

Room: Fir Ballroom

PDHS: 2.75

- 2A 1:30pm Troubleshooting Activated Sludge through Microscopic Observations: Five Case Studies**
Paul Pitt, Hazen & Sawyer; David Jenkins, David Jenkins and Associates, Inc., Sarah Galst, Michael Lynch, Katya Bilyk, Alonso Griborio, Bryan Atieh, Hazen & Sawyer
- 2B 1:50pm Fine Tuning Your Biological Nutrient Removal System**
John Gallegos, *CDM Smith*
- 2C 2:10pm Optimization Of Clarifier Performance To Enhance Biological Nutrient Removal**
Alonso Griborio, Irene Chu, *Hazen and Sawyer*; Meei-Lih Ahmad, *San Francisco Public Utilities Commission*; James Wang, Dave Freitas, *EBMUD*
- 2:30pm Facilitated Discussion**
- 3:00pm Networking Break**
- 2D 3:45pm Calibrating Glycerin Driven EBPR to Full Scale Results at a 350 MGD Midwestern Plant**
Samuel Ledwell, Mehran Andalib, *Environmental Operating Solutions, Inc.*
- 2E 4:05pm Managing Nutrient Removal at a 4-Sludge BNR Facility**
Kelley Mayne, *City of San Jose*; James Ervin, *San Jose-Santa Clara Regional Wastewater Facility*
- TB 4:25pm Optimizing Operations to Reduce Sidestream Recycling of Phosphorus**
Jeffrey Sober, *Garver*; John Bennett, Mike Roser, Clifford Woods, Craig Harvey, *Trinity River Authority of Texas*
- 4:30pm Facilitated Discussion**
- 5:00pm Session Adjourns**

Session 3: Compliance Strategies

Monday, July 27, 2015
1:30pm – 5:00pm

Room: Pine Ballroom
PDHS: 2.75

Moderator: Aren Hansen, *Brown and Caldwell*

- 3A 1:30pm Compliance Strategies to Meet a Zero Net Loading Limit for Phosphorus**
Linda Sawyer, Brown and Caldwell; Rita Miller, Mike Prinz, City of Santa Rosa, California; Dave, Smith, Merritt Smith Consulting
- 3B 1:50pm Assessing the Feasibility of Phosphorus Trading Programs**
Alex Johnson, The Freshwater Trust
- 3C 2:10pm Implementing a New Regulatory Paradigm to Support Effective Nutrient Management in California**
Thomas Grovhoug, Larry Walker Associates; Adam Link, California Association of Sanitation Agencies; Mitchell Mysliwec, Larry Walker Associates
- 2:30pm Facilitated Discussion**
- 3:00pm Networking Break**
- 3D 3:45pm Six Municipalities, One Watershed: A Collaborative Approach to Remove Phosphorus in the Assabet River Watershed**
Luke Cole, ORISE Postdoctoral Fellow; Lisa Larimer, Corey Buffo, US EPA
- 3E 4:05pm Seeing Red, but 'in the Black' - Diverse Case Studies Demonstrate Substantial Cost Savings by Converting to Deammonification**
Timothy Constantine, CH2M
- 4:30pm Facilitated Discussion**
- 5:00pm Session Adjourns**

Session 4: New Technologies

Tuesday, July 28, 2015

Room: Oak Ballroom

8:30am – 12:00pm

PDHS: 2.75

Moderator: Wendell Khunjar, *Hanzen and Sawyer*

- 4A 8:30am Redefining Being Green: Extended Piloting of an Algae-Based Technology for Low-Level Nutrient Removal and Recovery**
Alexandra Doody, CDM Smith; Karla Sangrey, Mark Johnson, Upper Blackstone Water Pollution Abatement District; Jane Madden, CDM Smith; Rick Johnson, Will Holm, Clearas Water Recovery
- 4B 8:50am Pilot Testing Of Struvite Recovery from Dewatering Centrate of a German Municipal WWTP through Electrochemical Precipitation (ePhos Technology)**
Iosif Mariakakis, Jennifer Bilbao, Siegfried Egener, Thomas, Hirth, Fraunhofer
- 4C 9:10am Aerobic Granular Sludge Bench-Scale Startup and Testing to Full-Scale Conceptual Design**
Roland Jezek, Ed Kobylinski, Mark, Steichen, James Barnard, Black & Veatch; Belinda Sturm, University of Kansas
- 9:30am Facilitated Discussion**
- 10:00am Networking Break**
- 4D 10:45am Hybrid Adsorption Biological Treatment Systems (HABiTS) for Improved Nitrogen Removal in Onsite Wastewater Treatment**
Sarina Ergas, University of South Florida; Lucie Krayzelova, Institute of Chemical Technology Prague, Czech Republic; Laura, Rodriguez-Gonzalez, Karl Payne, Maya Trotz, University of South Florida
- 4E 11:05am Industry Update for WASSTRIP® Impacts On Nutrient Flows, Digestion and Dewatering of EBPR Solids**
Ahren Britton, Steve Wirtel, Ram Prasad, Nate Turner, Ostara Nutrient Recovery Technologies
- 11:30am Facilitated Discussion**
- 12:00pm Session Adjourns**

TECHNICAL PROGRAM

Session 5: Process Control Optimization

Tuesday, July 28, 2015

8:30 AM – 12:00 PM

Moderator: Leon Downing, *Ch2M*

Room: Fir Ballroom

PDHS: 2.75

- 5A 8:30am Implementation of Ammonia-Based Aeration Control (ABAC) at Full-Scale Wastewater Treatment Plants**
Kshitiz Uprety, *HRSD/ODU*; Amanda Kennedy, Bill Balzer, Rick Baumler, Ryan Duke, *Charles Bott, HRSD*
- 5B 8:50am Seeking the Optimum Approach for Generating VFA/rbCOD To Ensure Reliable EBPR at the Robert W. Hite Treatment Facility**
Kimberly Cowan, Kurt, Carson, Cynthia, Lynch, James McQuarrie, *Metro Wastewater Reclamation District*
- 5C 9:10 am Aeration Control Strategies for Nitrogen Removal: A Pilot and model Based Investigation**
Pusker Regmi, *Brown and Caldwell*; Mike Sadowski, *Virginia Tech*; Jose Jimenez, *Brown and Caldwell*; Charles Bott, *HRSD*
- 9:30am Facilitated Discussion**
- 10:00am Networking Break**
- 5D 10:45am Using Step-Feed to Improve Secondary Effluent Ammonia Control**
Bruce Johnson, Jennifer Phillips, *CH2M*; Greg Smith, John Sherlock, *Pima County Regional Wastewater Reclamation Department*
- 5E 11:05am Better Process Control Enables Performance Exceeding Limits of Technology in Nutrient Removal - Truckee Meadows Water Reclamation Facility Experience**
Kishora Panda, Michael Drinkwater, Todd Saxberg, *Truckee Meadows Water Reclamation Facility*
- TB 11:25am Aeration Considerations in the Design and Operation Of Biological Nutrient Removal Processes**
Joe Rohrbacher, Paul Pitt, Jim Cramer, *Hazen and Sawyer*; Diego Rosso, *University of California, Irvine*
- 11:30am Facilitated Discussion**
- 12:00pm Session Adjourns**

Session 6: Nutrient Management Lessons Learned

Tuesday, July 28, 2015

Room: Pine Ballroom

8:30am – 12:00pm

PDHS: 2.75

Moderator: Tina Pham, *City of San Jose Environmental Services Dept.*

- 6A 8:30am **Nutrient Recovery At the F. Wayne Hill Water Resources Center: Design and Full Scale Start Up**
Ron Latimer, *Hazen and Sawyer*
- 6B 8:50am **Prove It! Demonstrating Performance of a Combined Carbon and Ammonia Removal BAF**
Jon Pearson, *AECOM*; Terry Desmarais, Paula Anania, *City of Portsmouth, NH.*; Jon Pearson, *AECOM*; Erik Grotton, *Blueleaf, Inc.*
- 6C 9:10am **Startup of a Low-Phosphorus Nitrifying Tertiary Membrane System**
Mario Benisch, *HDR Engineering Inc.*; Casey Fisher, *City of Coeur d'Alene*
- 9:30am **Facilitated Disucssion**
- 10:00am **Networking Break**
- 6D 10:45am **Planning, Design, and Operation Of A BNR Plant With Air Mixed Selectors**
Donavan Esping, *Brown and Caldwell*; Carol Mordorski, George Sprouse, Christine Voigt, *MCES*
- 6E 11:05am **Low Cost Biological Nutrient Removal for Treatment Plants in the Upper Long Island Sound Watershed**
Jeanette Brown, *JJ Environmental, LLC*; Emily Bird, *New England Interstate Water Pollution Control Commission*; Stacy Passaro, *Passaro Engineering*
- TB 11:25am **IFAS Systems with Structured Sheet Media for Simultaneous Carbon Oxidation, Nitrification, Denitrification and Implications**
Hua Li, *Brentwood Industries, Inc.*; Jia Zhu, Michael Faeth, Bryan Rothermel, *Brentwood Industries*
- 11:30am **Facilitated Discussion**
- 12:00pm **Session Adjourns**

TECHNICAL PROGRAM

Session 7: Leading Edge Nutrient Removal Research and its Practical Application for Front Line Practitioners

Tuesday, July 28, 2015

1:30 PM – 5:00 PM

Room: Oak Ballroom

PDHS: 2.75

Moderator: Daniel Dair, *World Water Works*

- 7A 1:30pm WERF Addresses Challenges of Minimizing Effluent Nutrient Concentrations**
JB Neethling, *HDR Engineering Inc.*; David Stensel, *University of Washington*; Julian Sandino, *CH2M*; Roy Tsuchihashi, *AECOM*; David Clark, *HDR Engineering Inc.*; A. Pramanik, *WERF*
- 7B 1:50pm The Importance of Nutrient Species For Treatment Performance And Surface Water Impacts**
David Stensel, *University of Washington*; J.B. Neethling, *HDR Engineering Inc.*; David Clark, *HDR Engineering Inc.*; Julian Sandino, *CH2M*; Roy Tsuchihashi, *AECOM*; A. Pramanik, *WERF*
- 7C 2:10pm Developing Attainable and Protective Permits for Nutrients**
David Clark, *HDR Engineering Inc.*; J.B. Neethling, *HDR Engineering Inc.*; David Stensel, *University of Washington*; Julian Sandino, *CH2M*; Roy Tsuchihashi, *AECOM*; A. Pramanik, *WERF*
- 2:30pm Facilitated Discussion**
- 3:00pm Networking Break**
- 7D 3:45pm Advances in the State of The Practice for the Design of Nutrient Removal Facilities**
Julian Sandino, *CH2M*; Roy Tsuchihashi, *AECOM*; J.B. Neethling, *HDR Engineering Inc.*; David Stensel, *University of Washington*; David Clark, *HDR Engineering Inc.*; A. Pramanik, *WERF*
- 7E 4:05pm Advances in the State of the Practice for the Operation of Nutrient Removal Facilities**
Roy Tsuchihashi, *AECOM*; Julian Sandino, *CH2M*; J.B. Neethling, *HDR Engineering Inc.*; David Stensel, *University of Washington*; David Clark, *HDR Engineering Inc.*; A. Pramanik, *WERF*
- 4:30pm Facilitated Discussion**
- 5:00pm Session Adjourns**

Session 8: Research and New Technologies

Tuesday, July 28, 2015

1:30 PM – 5:00 PM

Room: Fir Ballroom

PDHS: 2.75

Moderator: Sarina Ergas, *University of South Florida*

- 8A 1:30pm Phototrophic Membrane Bioreactor (PMBR) for the Management of Nutrients in Domestic Wastewater within the Context of Algal Biorefinery and Biofactory Concepts**
Onur Ozcan, Herby Jean, Robert Bair, Ana Prieto, Daniel Yeh,
University of South Florida
- 8B 1:50pm A New Kind of Nutrient Standard: Strengthening Linkages Between Nutrients, Algal Blooms, and Aquatic Life**
Clifton Bell, *Brown and Caldwell*
- 8C 2:10pm Real Time Process Control Algorithms Combining Process Modeling and Instrumentation**
Joseph Rohrbacher, Katya Bilyk, David Wankmuller, Paul Pitt,
Hazen and Sawyer
- 2:30pm Facilitated Discussion**
- 3:00pm Networking Break**
- 8D 3:45pm Demonstration of an Up-flow Biological Aerated Filter System for Nitrogen Removal from Non-nitrified Secondary Effluent**
Liyang Jin, Young Eum, Joon Min, Hongkeun Park, Alice Robinson,
BKT United
- 8E 4:05pm Nutrient Recovery as a Sustainable Nutrient Management Tool**
Wendell Khunjar, *Hazen and Sawyer P.C.*
- 4:30pm Facilitated Discussion**
- 5:00pm Conference Adjourns**

Session 9: BNR Process Demonstrations

Tuesday, July 28, 2015

1:30 PM – 5:00 PM

Moderator: Kam Law, *Greeley and Hansen*

Room: Pine Ballroom

PDHS: 2.75

- 9A 1:30pm **BNR Process using RAS Anaerobic Zone**
Gerry Stevens, *AECOM*
- 9B 1:50pm **Operation of a Demonstration Scale Mixed Liquor Fermenter to Improve Total Phosphorus and Nitrogen Removal under Carbon Limitations**
Rion Merlo, *Brown & Caldwell*
- 9C 2:10pm **Challenges to Achieving Stable Performance in a Site-Specific EBPR Configuration (AAnO) at the Stickney Water Reclamation Plant**
Heng Zhang, *MWRD of Greater Chicago At Stickney WTP*; Joseph Kozak, Cindy Qin, Brett Garelli, *MWRDGC*
- 2:30pm **Facilitated Discussion**
- 3:00pm **Networking Break**
- 9D 3:45pm **The Successful Start up of a Biological Nutrient Removal Facility and Lessons Learned from Process Upsets**
Seppi Henneman, Rion Merlo, Denny Parker, Bob Witzgall, *Brown and Caldwell, CA.*; Ken Abraham, *HDR, CA.* Steve Ramberg, *Regional San, CA.*
- 9E 4:05pm **Mystic Takes (a) Charge: Startup of the Biomag Process**
Megan Moody, William McConnell, *CDM Smith*
- TB 4:25pm **Technology Innovations that Provide Flexibility for Reliable Biological Nutrient Removal and Phased Site Space Utilization: Challenges and Solutions**
Zeynep Erdal, *CH2M*; Gary DeJesus, Cathi Zammit *City of San Mateo*; Jay Witherspoon, Doug Berschauer *CH2M*, Brad Underwood, *City of San Mateo*; Jay Witherspoon, *CH2M*
- 4:30pm **Facilitated Discussion**
- 5:00pm **Conference Adjourns**