

# **Collection Systems 2017 Conference**

Collections in the Heartland – Collecting  
Today for a Cleaner Tomorrow

Omaha, Nebraska, USA  
21 - 24 May 2017

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# TECHNICAL PROGRAM

## Session 1: Operation & Maintenance

Monday, May 22, 2017

10:45 AM – 11:45 AM

**Moderators:** Sean W. Fitzgerald, Eric Lienhard, Hazen & Sawyer

- 01A 10:45 AM Implementing and Effectiveness of Baltimore County's Sewer Line Rapid Assessment Tool (SL-RAT) Program.....1**  
Paul Sayan, Louis Berger; Thomas Kiefer,  
Baltimore County Department of Public Works
- 01B 11:15 AM Developing Long-Term Sewer Replacement Programs Based on Real Data- Tri-Level Sensor Inspection .....9**  
R. Patrick Judge, Gonzalez Companies, LLC; Don Uberroth, Ace Pipe Cleaning Inc.; Jeff Taylor, City of O'Fallon, Illinois; Terry Adams, Gonzalez Companies
- Alternate Performance Measurement Helps Manage Your CMOM Program .....24**  
Steve Donovan, Brown and Caldwell

# TECHNICAL PROGRAM

## Session 2: Invited Session I: Missouri and Kansas Case Studies

Monday, May 22, 2017

1:30 PM – 4:45 PM

**Moderators:** Srinivas Vallabhaneni, MWH Global; Christy Willson, Horner & Shifrin

- 02A 1:30 PM Springfield- Greene County Integrated Plan: A Citizen Focused Approach .....33**  
Errin Kemper, City of Springfield, MO; John Stober, HDR
- 02B 2:00 PM State of the Rates - Missouri's 2016 Wastewater & Water Rate Survey .....58**  
Phil Walsack, Missouri Public Utility Alliance
- 02C 2:30 PM St. Louis MSD CSO Volume Reduction Green Infrastructure Program .....61**  
Gary Moore, Melantha Norton, Metropolitan St. Louis Sewer District
- 3:00 PM Networking Break**
- 02D 3:45 PM Johnson County Wastewater Collection System Asset Management Program - A Road Map to Continuous Improvement .....82**  
Ryan Eisele, HDR; Joe Barnes, Johnson County Wastewater; David Spencer, Peter Moody, HDR
- 02E 4:15 PM Balancing Existing Conditions, Clean Water Act Compliance, and Harsh Realities: Development of the Unified Government's Integrated Overflow Control Plan .....112**  
Waldo Margheim, Burns & McDonnell; Trenton Foglesong, Lori Mundhenke, Unified Government of Wyandotte County and Kansas City, Kansas

# TECHNICAL PROGRAM

## Session 3: Sanitary Sewer Overflow

Monday, May 22, 2017

1:30 PM – 4:45 PM

**Moderators:** Gregory R. Heath, AECOM; Diane Sumego, Black & Veatch

- 03A 1:30 PM**      **Managing the Public Outreach, Regulatory, Funding, and Operations Challenges of Framingham's Infrastructure Improvements Program .....118**  
James Barsanti, Town of Framingham
- 03B 2:00 PM**      **Joint Depth, Duration, Frequency Analysis of Rainfall Leading to Sanitary Sewer Overflows .....131**  
Felix Belinger, Tetra Tech; Baxter Vieux, Vieux & Associates, Inc.; Matt Vaughan, City of Tulsa Oklahoma
- 03C 2:30 PM**      **SSO PREVENTION Using an Advanced Alert System .....136**  
Christopher Parrish, City of Atlanta, GA
- 3:00 PM**      **Networking Break**
- 03D 3:45 PM**      **Real Time Control and Optimized Storage for Affordable Peak Flow Management .....142**  
Michael Milius, Olsson Associates
- 03E 4:15 PM**      **We Can Ride the Wave but How Do We Measure It! Flow Monitoring for Challenging Sites .....148**  
Stephen Motley, City of Virginia Beach; Kraig Moodie, FloWav
- Alternate**      **Holistic Evaluation of Interceptor along Creek - Capacity Evaluation, SSES and Stream Restoration .....159**  
Neepa Shah, Greeley and Hansen; Eric Schrader, City of Lynchburg; Keith Thompson, Wiley/Wilson

# TECHNICAL PROGRAM

## Session 4: Infiltration and Inflow

Monday, May 22, 2017

1:30 PM – 4:45 PM

**Moderators:** Phillip Hubbard, Hampton Roads Sanitation District; Carl C. Chan, CDM Smith

- 04A 1:30 PM Optimizing Kansas City's Investment in Public and Private I/I Reduction to Reduce Overflows .....171**  
John J. Pruss, Burns & McDonnell; Andy Shively, City of Kansas City, Missouri
- 04B 2:00 PM A Focused Sanitary Sewer Survey Provides Actionable Results for A Successful Sewer Rehabilitation Project .....173**  
Joseph Kamalesh, Gary Silcott Jr, Stantec Consulting Services Inc.; Nick Maniskas, City of Logan, OH
- 04C 2:30 PM Ecoflow Update - Lessons Learned from the Private I/I and Rainwater Reduction Program in Lawrence, KS .....182**  
Nick Hoyt, City of Lawrence
- 3:00 PM Networking Break**
- 3:45 PM Facilitated Discussion:**  
Panelists and Specific Topics TBD

# TECHNICAL PROGRAM

## Session 5: Trenchless

Tuesday, May 23, 2017

8:30 AM – 11:45 AM

**Moderators:** David Servidio, Hatch Mott MacDonald; Daniel J. Murray, US Environmental Protection Agency

- 05A 8:30 AM Noble Gulch Trunkline Relocation Project: Implementation of a Multifaceted Trenchless Technology Program .....193**  
Keith Corcoran, Anne Prudhel, Carollo Engineers
- 05B 9:00 AM Accomplishing Sewer Separation through a Landfill and Botanical Garden with Trenchless Technology .....207**  
Chris Koenig, HDR
- 05C 9:30 AM Suburban Lancaster Sewer Authority - Transite Pipe Lining Program .....226**  
Adam Smith, CDM Smith
- 10:00 AM Networking Break**
- 05D 10:45 AM A Trenchless Approach to Lift Station Elimination .....240**  
Adam Maughn, Daniel Huffines, Freese and Nichols, Inc.; Lindy Higginbotham, City of Garland, Texas
- 05E 11:15 AM Slip Lining Rehabilitation Approaches for Large Force Mains .....253**  
Daniel Garcia, Tom Brzezinski, Wade Trim; Miguel Pichardo, MD WASD; Dan LaCross, Ric Man
- Alternate Risk Management for the Mishawaka 7,000-Foot-Long Term Control Plan Tunnel .....270**  
Gregg Sherry, Sarah Myers, Brierley Associates

# TECHNICAL PROGRAM

## Session 6: Pump Stations & Forcemain

Tuesday, May 23, 2017

8:30 AM – 11:45 AM

**Moderators:** Jennifer Steffens, Pure Technologies; David Bennett, Freese & Nichols

- 06A 8:30 AM Utilizing the Hazard Mitigation Grant Program to Improve Sewer Pump Station Resiliency .....282**  
Timothy Sumner, Crawford Murphy & Tilly Inc.
- 06B 9:00 AM Modal Analysis as a Tool to Resolve Pump Intermediate Bearing Vibration Issues .....298**  
John Koch, HDR
- 06C 9:30 AM Identifying Cause of Rupture Disk Breaks at Alberta Capital Region Wastewater Commission Parkland Pump Station .....316**  
Michael Georgalas, Stantec
- 10:00 AM Networking Break**
- 06D 10:45 AM After The 104 Days and 104 Nights: Improvements to The N. 28th Stormwater Pumping Station Following The 2011 Missouri River Flood .....332**  
Timothy Schneller, George Butler Associates;  
Jeffery Krist, City of Council Bluffs, Iowa
- 06E 11:15 AM Wastewater Pumps with Breakthrough Integrated Intelligence .....346**  
Lisa Riles, Xylem Inc.
- Alternate 1 Putting it All Together: City of Columbia Pump Station Maintenance Program .....364**  
Simon Watson, Brown and Caldwell; Ashley Dove, City of Columbia, SC; Jay Fulmer, Brown and Caldwell



# TECHNICAL PROGRAM

**Session 6: Pump Stations & Forcemain (Continued)**

**Tuesday, May 23, 2017**

**8:30 AM – 11:45 AM**

**Alternate 2**

**Construction Challenges for Pump Station  
Rehabilitation .....355**

Suzie Carpenter, CDM Smith; Bon Marie Gardner,  
Kansas City, MO

# TECHNICAL PROGRAM

## Session 7: Modeling

Tuesday, May 23, 2017

8:30 AM – 11:45 AM

**Moderators:** Timothy Ruggaber, Emnet LLC; Gregory R. Heath, AECOM

- 07A 8:30 AM Use of CFD Modeling for Designing Permanent Canal Closure Project Pump Stations .....368**  
Fangbiao Lin, John Take, Stantec
- 07B 9:00 AM Attacking the Big Data Challenge: Integrating Collection System Flow Monitoring and Modeling into Financial Billing .....395**  
Yuanhang Meng, Black & Veatch; Charles Schroeder, Mike Lunn, City of Grand Rapids, MI; Ben Whitehead, Steve Cook, Black & Veatch
- 07C 9:30 AM Moving Beyond a Plan: Precision Modeling in Boston, Ma .....409**  
Sharon Tsay, Larry Soucie, Victoria Zabierek, AECOM; Paul Keohan, Boston Water and Sewer Commission
- 10:00 AM Networking Break**
- 07D 10:45 AM Getting It Right: The Hampton Roads Approach to Hydraulic Model Data Collection and Management .....427**  
Priyanka Mohandoss, Matthias Wittenberg, CDM Smith; Robert Martz, Hampton Roads Sanitation District
- 07E 11:15 AM When are LIDs not LIDs? Using SWMM LID Tools to Calibrate to Existing Conditions .....444**  
Robert Greytak, Chris Rybak, CT Consultants

# TECHNICAL PROGRAM

## Session 7: Modeling (Continued)

Tuesday, May 23, 2017

8:30 AM – 11:45 AM

- Alternate 1   Riverview Lift Station: A Hydraulic Balancing Act .....N/A**  
Weston Engel, Brian Clow, Maya Turner, Ryan Rossell, Carollo Engineers; Jacob Hansen, City of Omaha
- Alternate 2   SSO 700 Integrated Watershed Action Plan: Selection of A Robust Data Set to Support the Successful Continuous Calibration of a Collection System Model .....N/A**  
Victoria Berry, Susan Moisio, CH2M; Andrew Spurgeon, MSDGC

# TECHNICAL PROGRAM

## Session 8: Planning

Tuesday, May 23, 2017

1:30 PM – 3:00 PM

**Moderators:** Christy Willson, Horner & Shifrin; Gary T. Moore, St. Louis Metropolitan Sewer District

- 08A 1:30 PM Managing the Useful Life of Your Segmented Block Combined Sewer .....462**  
Dianne Sumego, Black & Veatch; David Schnipke, City of Lima, Ohio
- 08B 2:00 PM How to Prevent Your Wastewater CIP from Being Flushed - The Intersection of Master Planning and Business Planning ....470**  
Richard Weatherly, Kendall Ryan, Freese and Nichols, Inc.; Carol Reed, City of Huntsville
- 08C 2:30 PM Memorandum on Principles for Wet Weather Flow Design Decision Making .....487**  
John Hall, Hall & Associates
- Alternate New Approach to Design Level of Service for Wichita's Collection System .....490**  
Miranda Sloan, Burns and McDonnell

# TECHNICAL PROGRAM

## Session 9: Intelligent Networks

Tuesday, May 23, 2017

1:30 PM – 3:00 PM

**Moderators:** Daniel J. Murray, US Environmental Protection Agency;  
Steve Donovan, Brown and Caldwell

**09A 1:30 PM Into the Information Age: Application of Internet of things for Sewer Maintenance Optimization .....499**  
Richard Haimann, Haimann Engineering; Tamsen McNarie, San Antonio Water System; Greg Quist, Keith Lewinger, SmartCover Systems

**09B 2:00 PM Intelligent Platform Approach Enables Breakthrough Results: Case Studies from the US and UK Wastewater and Water Markets .....517**  
Pete Percivalle, Srinu Vallabhaneni, John Abrera, Kevin Johnson, MWH Global now part of Stantec

**09C 2:30 PM Big Pipes Plus Low Flow Equals Cost Savings -- Startup and Lessons Learned .....528**  
Jon Schommer, EmNet; Oluwale McFoy, Buffalo Sewer Authority; Michael Quinn, GHD; Timothy Ruggaber, EmNet

**Alternate Using Hydraulic Model Based Optimization to Help Determine the Best Solution to Accommodate Future Growth in the Mill Creek Watershed .....N/A**  
Ryan Eisele, HDR Inc.; Stuart Lord, Johnson County Wastewater; Joel Wilson, WCS; Sasa Tomic, HDR Inc.

# TECHNICAL PROGRAM

## Session 10: Design / Construction

Tuesday, May 23, 2017

1:30 PM – 3:00 PM

**Moderators:** Fernando F. Gonzalez, City of Los Angeles Industrial Waste Mgmt Div; Pono Hanson, Brown and Caldwell

- 10A 1:30 PM The Ultimate Infrastructure Recycling: Putting the Hollywood Hills Abandoned Sewer Trunkline to Good (Re)Use .....543**  
Javier Dennis, Adel Hagekhalil, Ali Poosti, Fernando Gonzalez, Rowena Lau, Kwasi Berko, City of Los Angeles; Gary Skipper, Cleve Lee, Brown & Caldwell
- 10B 2:00 PM Not in My Backyard, Anymore: A Successful Backyard Sewer Replacement Program .....557**  
Richard Underhill, Kelvin Coles, Greeley and Hansen; Belinda Wilson, Virginia Beach Department of Public Utilities
- 10C 2:30 PM Evaluation of High pH Infiltration Water and Recycled Bedding Material .....578**  
Keith Hobson, FOX Engineering Associates Inc.
- Alternate Superstorm Sandy Aftermath: Providing Resiliency for Critical Infrastructure with a new Stormwater Collection System .....586**  
Anthony Brozier, Michael Vecchio, HDR

# TECHNICAL PROGRAM

## Session 11: Combined Sewer Overflows

Wednesday, May 24, 2017

8:30 AM – 11:45 AM

**Moderators:** David Servidio, Hatch Mott MacDonald; Gary T. Moore, St. Louis Metropolitan Sewer District

- 11A 8:30 AM Bangor’s Version of an Integrated Wet Weather Plan .....600**  
Kate Mignone, AECOM; Amanda Soucier, City of Bangor; Gregory Heath, AECOM
- 11B 9:00 AM Odor Control Management for Combined Sewer Overflow Structures .....626**  
Ray David, Greeley and Hansen
- 11C 9:30 AM Minne Lusa Stormwater Conveyance Sewer Tunnel and Detention Basin Forebay Hydraulics .....634**  
Ken Christison, Northwest Hydraulic Consultants Inc.; Janet Strickland, AECOM; Tom Demlow, Northwest Hydraulic Consultants Inc.; Eitan Tsabari, City of Omaha
- 10:00 AM Networking Break**
- 11D 10:15 AM Refined Numerical Modeling of the Flow Partition in a Combined Sewer Diversion Structure under Supercritical Flow Conditions .....642**  
Yovanni Catano, David Bedoya, Nicholas Anderson, MWH Global, now Part of Stantec
- 11E 10:45 AM You Can Dig It, But Can You Operate It? Proactive CSO Tunnel Operational Planning .....655**  
Christopher Ranck, Arcadis; Jessica Bastin, John Trypus, Jeff Hansen, Citizens Energy Group

# TECHNICAL PROGRAM

## Session 11: Combined Sewer Overflow (Continued)

Wednesday, May 24, 2017

8:30 AM – 11:45 AM

- 11F 11:15 AM Mind Over Model: Optimization of Gate Closure for the South Hartford Conveyance and Storage Tunnel .....675**  
Lawrence Soucie, Dominique Brocard, Kate Mignone, AECOM; Andrew Perham, Hartford, Ct. Metropolitan District
- Alternate 1 Long Range Parabolic Depth Sensor Allows Agencies to Detect Growing Blockages, Monitor CSOs and Conduct Micro-metering .....699**  
Patrick Stevens, Kevin Enfinger, ADS Environmental Services
- Alternate 2 Understanding Wet Weather Regulations - An Overview for Wet Weather Practitioners .....712**  
Santtu Winter, Bill Kreuzberger, CH2M



# TECHNICAL PROGRAM

## Session 12: Asset Management

Wednesday, May 24, 2017

8:30 AM – 11:45 AM

Moderators: Diane Sumego, Black & Veatch; Luis R. Leon

- 12A 8:30 AM Using Robust Asset Management Technology to Tackle Inaccessibility in Dallas .....742**  
Harrison Steed, ARCADIS  
Presenter: Sacheev Mandhle
- 12B 9:00 AM Using Multi-Sensor Technologies in Large Interceptor Sewers to Develop Sensible Risk-Managed Capital Improvement Planning .....763**  
Mark Wade, Providence Infrastructure Consultants, Inc.; Michelle Beason, National Plant Services
- 12C 9:30 AM City of Ottawa’s Strategic Infrastructure Management Plan: Development and Application of a Triple-Bottom-Line-“Plus” Risk-Assessment Framework for Collection Systems Criticality Assessment and Needs Prioritization .....775**  
Adrien Comeau, Stantec; Peter McKay, City of Ottawa
- 10:00 AM Networking Break**
- 12D 10:15 AM Utilizing ArcGIS Online for Project Delivery on Sewer System Evaluation Study .....789**  
Brian Villers, Northeast Ohio Regional Sewer District; Joe Pavlick, Water Resources & Coastal Engineering; Imad Salim, Matt St. Pierre, Wade Trim; Tiffany Ashforth, Dan Porter, Ryan Pulis, Brown & Caldwell; Kevin Vander Tuig, Wade Trim
- 12E 10:45 AM Good to Great: A More Dynamic and Robust Linear Asset Management Program .....806**  
Paul Longo, Dewberry; Jonathan Okafor, Fairfax County

# TECHNICAL PROGRAM

## Session 12: Asset Management (Continued)

Wednesday, May 24, 2017

8:30 AM – 11:45 AM

- 12F 11:15 AM**      **Managing The Service Life of a Brick & Cast in Place Concrete Sewer.....811**  
Bryon Livingston, Black & Veatch; Andy Clements, City of St. Joseph
- Alternate**      **Large Scale, Priority-driven Field Data Collection and Rehabilitation: How Dekalb County Department of Watershed Management Managed Multiple Assessment Contractors to Target and Coordinate Sewer Rehabilitation .....817**  
Darren Eastall, Dekalb County

# TECHNICAL PROGRAM

## Session 13: Invited Session II: Nebraska and Iowa Case Studies

Wednesday, May 24, 2017

8:30 AM – 11:45 AM

**Moderators:** Jimmy Stewart, Compliance EnviroSystems; Kevin Vander Tuig

<b>13A</b>	<b>8:30 AM</b>	<p><b>Update on the City of Omaha’s CSO Long-term Control Plan .....830</b>  <u>Thomas Heinemann</u>, CH2M; James Theiler, City of Omaha</p>
<b>13B</b>	<b>9:00 AM</b>	<p><b>Tapping into Omaha Parks with Green Infrastructure .....854</b>  <u>Andy Szatko</u>, City of Omaha Stormwater Program</p>
<b>13C</b>	<b>9:30 AM</b>	<p><b>Enhanced Affordability Analysis of Combined Sewer Overflow Long-Term Control Plans - Omaha's CSO! Program .....862</b>  <u>Jason Mumm</u>, Hawksley Consulting; Jim Theiler, City of Omaha; Andy Baker, Carol Malesky, Hawkley Consulting</p>
	<b>10:00 AM</b>	<b>Networking Break</b>
<b>13D</b>	<b>10:15 AM</b>	<p><b>CSO Program Combines Non-Traditional Separation Implementation with Innovative CSO Disinfection .....869</b>  <u>Jay Brady</u>, Stanley Consultants, Inc.</p>
<b>13E</b>	<b>10:45 AM</b>	<p><b>Parallel Master Planning and Implementation to Address Significant Stormwater Needs ....888</b>  <u>Michael Butterfield</u>, HDR; Sandy Pumphrey, City of Cedar Rapids; David Dechant, HDR</p>
<b>13F</b>	<b>11:15 AM</b>	<p><b>Davenport, Iowa 14th District Diversion Study</b>  Karol Giokas, RJN Group .....899</p>
	<b>Alternate</b>	<p><b>Man-Entry Inspections of Large Sewers Using New, Old and Creative Technologies .....N/A</b>  John Schroeder, Drew Richards, CDM Smith</p>